A Rare Case of *Elizabethkingia meningoseptica* Bacteremia After Liver Transplantation

**Patient:** Female, 55-year-old

**Final Diagnosis:** Bacteremia

**Symptoms:** Fever

**Medication:** —

**Clinical Procedure:** —

**Specialty:** Critical Care Medicine • Infectious Diseases

**Objective:** Rare disease

**Background:** *Elizabethkingia meningoseptica* is an emerging pathogen in hospital environments. Immunocompromised individuals have a high risk of infections caused by *E. meningoseptica*, especially after transplantation. *E. meningoseptica* is associated with prolonged hospital stays and high mortality. In addition, *E. meningoseptica* is commonly resistant to many antibiotics used for gram-negative bacterial infections. We introduce the first case of *E. meningoseptica* bacteremia in a recipient of a liver transplant in Vietnam.

**Case Report:** A 55-year-old woman with end-stage liver disease due to biliary cirrhosis underwent living donor liver transplantation at the 108 Military Central Hospital. On day 3 after transplantation, the patient had an acute cellular rejection, and corticosteroid pulse therapy was used. On day 7 after transplantation, the patient had a fever and an increased white blood cell count and C-reactive protein level. Blood cultures were positive for *E. meningoseptica*. Intravenous levofloxacin was administered for 10 days. The patient showed an excellent treatment response to the antibiotic therapy and was discharged.

**Conclusions:** *E. meningoseptica*, a multidrug-resistant gram-negative bacteria, can be considered an emerging pathogen in the hospital environment, especially in patients receiving organ transplants. Early recognition helps physicians to improve patient outcomes.

**Keywords:** Bacteremia • beta-Lactamase GOB-1, *Elizabethkingia meningoseptica* • Liver Transplantation

**Full-text PDF:** https://www.amjcaserep.com/abstract/index/idArt/933992
Background

Elizabethkingia meningoseptica, a gram-negative rod-shaped bacterium that is commonly detected in the environment (particularly in soil and water), was first described by Elizabeth King in 1959 [1]. E. meningoseptica has been an emerging pathogen in hospitals, causing meningitis outbreaks in neonates and immunocompromised patients [2,3].

Approximately 5 to 10 cases of E. meningoseptica infection are reported each year in the United States. E. meningoseptica infection has a high mortality rate due to the lack of effective therapeutic regimens, antibiotic resistance, and virulence. We report a rare bacteremia case due to E. meningoseptica following liver transplantation. We highlight the role of early diagnosis and appropriate treatment of this emerging infection.

Case Report

A 55-year-old woman presented to the 108 Military Central Hospital in Vietnam with a history of end-stage liver disease due to biliary cirrhosis. A right-lobe liver transplantation was performed from a living donor. Immunosuppressive therapy included tacrolimus, dose adapted on target trough level (12-15 ng/mL), and methylprednisolone 40 mg 4 times per day and tapered after that. On day 3 after transplantation, an acute cellular rejection occurred, and corticosteroid pulse therapy with a dose of 500 mg per day for 3 consecutive days was administered.

On day 7 after transplantation, the patient's blood pressure was 110/70 mmHg, heart rate was 102 beats per min, respiratory rate was 20 breaths per min, and temperature was 38.5°C. A peripheral white blood cell count increased from 8.2 g/L to 26 g/L, and C-reactive protein level increased from 6 mg/L to 35 mg/L. The abdominal ultrasound was normal. The patient continued to receive meropenem 1 g every 8 h. Blood cultures were positive for E. meningoseptica, a multidrug-resistant organism. Based on the antibiogram (Table 1), meropenem was changed to intravenous levofloxacin 500 mg per day. The central venous catheter was removed. Her clinical condition improved dramatically following treatment.

On day 14 after transplantation, the normal peripheral blood leukocyte count was 9.7 g/L, and the C-reactive protein level dropped to 4.5 mg/L. Antibiotics were continued for a total of 10 days. Repeat blood cultures were negative. The patient was first transferred to the ward and then discharged.

Table 1. Antimicrobial susceptibilities of an Elizabethkingia meningoseptica isolate obtained from a 55-year-old woman.

| Antimicrobial        | MIC (µg/mL) | Interpretation (CLSI) |
|----------------------|-------------|-----------------------|
| Ticarcillin          | ≥128        | Resistant             |
| Cefepime             | ≥64         | Resistant             |
| Ceftazidine          | ≥64         | Resistant             |
| Piperacillin/Tazobactam | ≥128       | Resistant             |
| Gentamicin           | ≥16         | Resistant             |
| Amikacin             | ≥64         | Resistant             |
| Meropenem            | ≥16         | Resistant             |
| Imipenem             | ≥16         | Resistant             |
| Levofoxacin          | 0.5         | Sensitive             |
| Ciprofloxacin        | 0.5         | Sensitive             |
| Aztreonam            | ≥64         | Resistant             |
| Colistin             | ≥16         | Resistant             |

MIC – minimum inhibitory concentration; CLSI – Clinical and Laboratory Standards Institute.

Discussion

E. meningoseptica is a gram-negative bacillus of the genus Chryseobacterium [1]. Risk factors associated with E. meningoseptica infection include cancer, hypoalbuminemia, diabetes mellitus, central venous catheter, low neutrophil count, corticosteroid use, organ transplantation, and inappropriate use of antibiotics [4-6].

E. meningoseptica is associated with prolonged hospitalization and a high risk of mortality. The multidrug-resistant nature of the bacteria is one of the most challenging issues [7,8]. There is no optimal regimen for the management of E. meningoseptica. Gram-negative bacteria are resistant to most antibiotics, such as β-lactams, cephalosporins, carbapenems, and gentamicin. However, gram-positive organisms are still susceptible to several antimicrobials, such as vancomycin, trimethoprim-sulfamethoxazole, rifampicin, and ciprofloxacin [5,8]. The mechanism of the antibiotics used for gram-positive organisms against E. meningoseptica is not well understood [9].

There are multiple infectious sources of E. meningoseptica, including water taps, central venous catheters, hand cultures, sink drains, keyboards, phones, and doorknobs [10]. Infection control staff of hospitals must have a policy to prevent E. meningoseptica in critically ill patients [11]. To the best of our knowledge, this is the first case of E. meningoseptica bacteremia in an immunocompromised patient following liver transplantation. There were many risk factors in our patient, including immunosuppression, central venous catheter, and inappropriate use of antibiotics.
Conclusions

*E. meningoseptica* is an emerging pathogen for hospital-acquired infection, especially in immunocompromised individuals following organ transplantation. This type of bacteria is a multidrug-resistant gram-negative organism; therefore, early recognition by clinicians is essential.

References:

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