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

Authors' Contribution:

Study Design A
Data Collection B
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Manuscript Preparation E
Literature Search F
Funds Collection G

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Corresponding Author: Pham Dang Hai, e-mail: bsphamdanghai@gmail.com**Financial support:** None declared**Conflict of interest:** None declared**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 TransplantationFull-text PDF: <https://www.amjcaserep.com/abstract/index/idArt/933992>

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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

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
Ceftazidime	≥64	Resistant
Piperacillin/Tazobactam	≥128	Resistant
Gentamicin	≥16	Resistant
Amikacin	≥64	Resistant
Meropenem	≥16	Resistant
Imipenem	≥16	Resistant
Levofloxacin	0.5	Sensitive
Ciprofloxacin	0.5	Sensitive
Aztreonam	≥64	Resistant
Colistin	≥16	Resistant

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

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.

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

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following organ transplantation. This type of bacteria is a multidrug-resistant gram-negative organism; therefore, early recognition by clinicians is essential.