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## Case Report

# Successful treatment of two cases of *Elizabethkingia meningoseptica* septicemia and a review of the literature



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## ABSTRACT

*Elizabethkingia meningoseptica* is emerging as a cause of hospital acquired infection particularly in immunocompromised adults. The treatment of this bacterium is difficult since it is intrinsically resistant to a number of antibiotics. Here we report two cases of septicemia in patients who were critically ill and were successfully treated with appropriate antibiotics. Cotrimoxazole, quinolones, and rifampicin seem to be drugs effective against *E. meningoseptica*. Antibiotic susceptibility results are ineffective in guiding treatment. The bacterium particularly colonizes water pipelines and tap faucets and occurrence of infection by this bacterium should direct attention towards eradicating the source of this bacterium.

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## 1. Introduction

An aging population, the AIDS epidemic, the growth of chemotherapeutic options for cancer treatment, a growing transplant population and high end critical care medicine with multiple interventions has resulted in a large population of immunocompromised patients. In immunocompromised patients, micro organisms with low pathogenic potential that is usually efficiently controlled by the immune system can suddenly cause life-threatening diseases that may be difficult

to treat with currently available anti-infectives. *Elizabethkingia meningoseptica* is one such bacteria which is emerging as an important cause of serious opportunistic infection in immunocompromised hosts.<sup>1,2</sup> *E. meningoseptica* has undergone several taxonomic changes and was previously known as *Flavobacterium meningosepticum* and *Chryseobacterium meningosepticum* and finally it was named after bacteriologist Elizabeth O. King who first isolated the bacteria.<sup>3</sup> *E. meningoseptica* is a non-motile, non-fermenting, oxidase positive, aerobic bacilli. We here report two cases of serious infection by *E. meningoseptica* which were successfully treated.

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## 2. Case report

### 2.1. Case 1

An 18-year-old female patient suffering from refractory Hodgkin's lymphoma (STAGE IV B) underwent autologous bone marrow transplant (BMT). She was put on immunosuppressive therapy with tacrolimus and mycophenolate mofetil to prevent graft rejection. She engrafted successfully initially with neutrophil on day 9th followed by platelets on day 12th post transplant. On day 10th post transplant she became septic and was managed with broad spectrum antibiotics meropenem and teicoplanin after sending samples for culture. Both the aerobic blood culture and urine culture samples showed growth of gram negative bacilli. The isolates were oxidase positive, non-motile and non-fermenter. Further identification and sensitivity was done in VITEK 2C (Bio-merieux) automated system. The isolates were identified as *E. meningoseptica*. The isolates were sensitive only to levofloxacin [Minimum Inhibitory Concentration (MIC) 2 µg/ml] when tested in VITEK using AST N090 cards and were resistant to all other commonly used antibiotics. *E. meningoseptica* was also isolated from the throat swab of this patient during routine pre-transplant surveillance. In view of the above findings levofloxacin was added. Subsequently blood culture became sterile. On day 15th post transplant the patient developed severe respiratory distress and had to be intubated and ventilated to support her respiratory functions. A broncho-alveolar lavage was performed at that time. BAL fluid culture also showed heavy growth of *E. meningoseptica*. But she continued to have repeated episodes of respiratory distress and her condition deteriorated and was shifted to the ICU (Intensive Care Unit). Levofloxacin was discontinued and vancomycin, trimethoprim/sulphamethoxazole and rifampicin (drugs which are effective against *E. meningoseptica* according to various literature.) were started on day 22 post transplant. Urine culture still showed growth of *E. meningoseptica* and Chest X ray had persistent infiltrates. Vancomycin was added on day 30th post transplant since it is reported to have therapeutic effect on *E. meningoseptica*. After about a week of above therapy the patient started improving and thereafter *E. meningoseptica* was not isolated from any of the clinical samples. Rifampicin and trimethoprim/sulphamethoxazole was continued for 10 more days and thereafter rifampicin was stopped and trimethoprim/sulphamethoxazole was continued for one month. Vancomycin was administered for a week. Her condition improved gradually and she was extubated on Day 37 post transplant and remained well with minimum oxygen requirement.

### 2.2. Case 2

A 25-year-old patient following caesarean section two days back was admitted to the hospital with abdominal pain and distention. The CAT scan of abdomen revealed severe acute pancreatitis (Balthazar E, CTSI 4/10) along with blood clots in pelvis with pleural and peritoneal effusion. At the time of admission she had features of disseminated intra vascular coagulation (DIC) for which she was treated with fresh frozen

plasma. She underwent surgical intervention for removal of pelvic blood clots and adhesionolysis. But despite her pancreatitis and coagulation parameters improving, her condition worsened and she developed fever and respiratory distress and was put on mechanical ventilation on day 10th of hospitalization. She started having spikes of high temperature. Suspecting sepsis with multidrug resistant bacteria she was empirically treated with polymyxin B, teicoplanin and caspofungin. Her chest X-ray showed presence of bilateral infiltrates. Blood and Endotracheal (E.T) secretion sent for culture showed growth of *E. meningoseptica*. The isolate was moderately sensitive to levofloxacin (MIC 4 µg/ml) and resistant to other antibiotics such as quinolones, beta lactams, aminoglycosides, trimethoprim/sulphamethoxazole, doxycycline. Following the isolation of *E. meningoseptica* the polymyxin B was substituted with rifampicin and trimethoprim/sulphamethoxazole. A repeat blood culture sent three days later again showed growth of *E. meningoseptica*. Gradually the patient started improving and she was extubated four days after starting *E. meningoseptica* specific antibiotics. The rifampicin was continued for two weeks and trimethoprim/sulphamethoxazole was continued for a total of three weeks. Repeat blood and urine cultures after 14 days were sterile and the patient was discharged in a haemodynamically stable condition.

## 3. Discussion

*E. meningoseptica* used to be implicated as a cause of infection in neonates. The literature is replete with cases of *E. meningoseptica* primarily in pediatric patients with neonates in particular.<sup>3</sup> *E. meningoseptica* is a well known cause of neonatal meningitis particularly in premature infants and often occurs as outbreaks with a very high mortality rate.<sup>4</sup> But recent literature search has shown that *E. meningoseptica* is emerging as a cause of infection in hospitalized adults as well. In adults *E. meningoseptica* has been mainly responsible for blood stream and respiratory infection unlike pediatric patients where meningitis is the most common presentation.<sup>2</sup> In adults *E. meningoseptica* is increasingly being reported as a cause of nosocomial infection in immunocompromised hosts. Respiratory infection in adults is mostly associated with mechanical ventilation.<sup>5</sup>

In both the above mentioned cases the patients were immunocompromised – one being a BMT recipient heavily on immunosuppressant therapy and the other was a patient with multiorgan involvement in the form of pancreatitis, acute respiratory distress syndrome, and DIC with multiple blood transfusions.

Respiratory route seems to be the portal of entry of the bacteria. Both our patients had severe chest infection and *E. meningoseptica* was isolated from BAL (Broncho Alveolar Lavage) and E.T secretion in significant numbers.

In the first case *E. meningoseptica* was isolated from the throat swab sample during routine surveillance days before infection by *E. meningoseptica* was detected. *E. meningoseptica* was also isolated from the tap water of Bone Marrow Transplant unit where the first case initially was admitted.

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