March 2018

Fatal elizabethkingia meningoseptica cholangitis following biliary stent placement

Khalid Ahmed
Aga Khan University

Syeda Atia Qudsia
Liaquat National Medical College and Hospital, Stadium Road, Karachi

Abdul Rehman
Aga Khan University

Syed Hani Abidi
Liaquat National Medical College and Hospital, Stadium Road, Karachi

CASE REPORT

Fatal *Elizabethkingia Meningoseptica* Cholangitis Following Biliary Stent Placement

Khalid Ahmed[1], Syeda Atia Qudsia[2], Abdul Rehman[1] and Syed Hani Abidi[1]

ABSTRACT

Elizabethkingia (E.) meningoseptica is a ubiquitous gram-negative bacillus belonging to the genus *Chryseobacterium* and has been reported to cause nosocomial infections in both the immunocompromised and immunocompetent patients. E. meningoseptica can colonize the biliary tree after endoscopic procedures; and cholangitis, caused by this organism, is associated with a favorable prognosis. Here, we report a fatal case of cholangitis secondary to E. meningoseptica that developed following biliary stent placement. This case suggests that E. meningoseptica can be a cause of potentially fatal biliary tract infections in patients who undergo biliary tract endoscopic procedures. Clinicians must not disregard this organism as a contaminant (or colonizer) as a delay in diagnosis and treatment can lead to a fatal outcome, as seen in this case.

Key Words: *Elizabethkingia meningoseptica. Chryseobacterium meningosepticum. Cholangitis. Multiple antibacterial drug resistance. Biliary stent. Complication.*

INTRODUCTION

Elizabethkingia (E.) meningoseptica, formerly known as Chryseobacterium meningosepticum, is an oxidase-positive, catalase-positive, non-glucose fermenting, and gram-negative bacillus that belongs to the genus *Chryseobacterium*. Eponymously named after Elizabeth King who first described this bacterium in 1959, this ubiquitous organism has been traditionally considered as a contaminant of blood cultures.[1] Reports published over the past two decades have shown that this bacterium can cause infections in both immuno-compromised and immunocompetent patients.[2] *E. meningoseptica* has been recognized as a frequent colonizer of bile, especially following endoscopic biliary tract procedures. Although it rarely causes biliary tract infection, cholangitis due to *E. meningoseptica* is generally associated with a favourable prognosis.[3]

Here, we report the case of an elderly lady who developed cholangitis due to *E. meningoseptica* following biliary stent placement and died subsequently because of septic shock.

CASE REPORT

A 70-year female with past history of hypertension and ischemic heart disease underwent work-up for obstructive jaundice at our hospital. She was diagnosed to have unresectable, peri-ampullary carcinoma and underwent palliative biliary stenting. Shortly after being discharged from the hospital, she presented again to the emergency department with fever, abdominal pain, and shortness of breath. On physical examination, she was febrile, tachycardiac, tachypneic and icteric. She was maintaining 92% oxygen saturation on room air. Chest auscultation was notable for harsh vesicular breathing with bilateral fine crackles.

Laboratory investigations revealed a total leukocyte count of 25.24 × 10^9 cells/L (reference: 4.0-11.0 × 10^9 cells/L) with predominant neutrophilia (94.4%) and platelet count of 575 × 10^9 cells/L (reference: 150-400 × 10^9 cells/L). Results of liver function tests included alanine aminotransferase of 61 IU/L (reference: less than 36 IU/L), aspartate transaminase of 335 IU/L (reference: less than 40 IU/L), alkaline phosphatase of 238 IU/L (reference: 75-120 IU/L) and total bilirubin of 10.4 mg/dl (reference: 0.3-1 mg/dl) with direct and indirect bilirubin of 6.3 mg/dl and 4.1 mg/dl, respectively.

A plain chest radiograph was obtained, which revealed bilateral interstitial infiltrates. Ultrasonography of the abdomen was also performed, which revealed minimal dilatation of extra- and intra-hepatic biliary channels. Blood, urine, and sputum cultures were sent and the patient was started empirically on clarithromycin (500 mg 2×/d), metronidazole (500 mg 3×/d) and ceftriaxone (2000 mg 1×/d). However, the patient's condition progressively worsened and she began to develop worsening respiratory failure. Arterial blood gas obtained on supplemental oxygen revealed partial pressure of oxygen of 51 mm Hg (reference: 70-100 mm Hg), partial pressure of carbon dioxide of 28 mm Hg (reference: 36-40 mm Hg), and bicarbonate concentration of 18 mmol/L

[1] *Department of Biological and Biomedical Sciences, The Aga Khan University Hospital, Karachi.*

[2] *Faculty of Health Sciences, Liaquat National Medical College and Hospital, Stadium Road, Karachi.*

Correspondence: Dr. Khalid Ahmed, Senior Instructor, Department of Biological & Biomedical Sciences, The Aga Khan University Hospital, P.O. Box 3500, Stadium Road, Karachi-74800. E-mail: khalidmd.ahmed@gmail.com

Received: March 18, 2017; Accepted: October 17, 2017.

(reference: 22-28 mmol/L). Due to worsening tachypnea and respiratory failure, endotracheal intubation was performed and she was shifted to the intensive care unit. Subsequently, a central venous catheter was inserted through the right femoral vein.

After about 48 hours, the patient continued to have spiking fever and was started on imipenem/cilastatin (500 mg 4×/d) and vancomycin (1000 mg 2×/d). Preliminary reports of blood cultures revealed growth of *E. meningoseptica*, which was disregarded as a contaminant initially. However, the patient's condition did not improve and final reports of tracheal, blood, and urine cultures showed growth of >105 CFU/mL of *E. meningoseptica*. Urine culture also grew vancomycin-resistant *enterococcus fecalis*. *E. meningoseptica* was sensitive to piperacillin-tazobactam and vancomycin, while *enterococcus fecalis* was sensitive to linezolid.

In consultation with infectious disease specialists, antibiotic therapy with piperacillin-tazobactam (4450 mg 3×/d), vancomycin (1000 mg 2×/d) and linezolid (600 mg 2×/d) was instituted (on the fourth day of admission). However, the patient's condition continued to deteriorate and she developed multi-organ dysfunction. Her arterial serum lactate rose to 4.5 mmol/L (reference: 0.6-2.2 mmol/L) and she began to develop hypotension (mean arterial pressure of less than 65 mm Hg). An arterial catheter was inserted for invasive blood pressure monitoring and norepinephrine infusion (3 mcg/minute) was started. Despite vasopressor support, patient went into cardiac arrest and could not be revived.

DISCUSSION

This case emphasizes the importance of considering *E. meningoseptica* as a potential pathogen of the biliary tract infection. This is in contrast with previously published evidence which suggested that cholangitis with *E. meningoseptica* following endoscopic procedures is associated with a good prognosis. Most strains of *E. meningoseptica* are resistant to carbapenems (conferred by the metallo-β-lactamase, BlaB) and this is the only bacterium known to have two chromosomally-encoded metallo-β-lactamase genes.[4] This organism is peculiar in that it is often sensitive to piperacillin-tazobactam, despite being resistant to carbapenem; and vancomycin has good activity against this organism, even though it is a gram-negative bacillus.[5] Due to these unique antibiotic susceptibilities, clinicians must keep *E. meningoseptica* in mind as a potential pathogen in patients who develop biliary sepsis following endoscopic procedures. A delay in recognizing this pathogen or disregarding it as a contaminant could have disastrous consequences for patients, as happened in the present case.

REFERENCES

1. Zong Z. *Elizabethkingia meningoseptica* as an unusual pathogen causing healthcare-associated bacteriuria. *Intern Med (Tokyo)* 2014; **53**:1877-9.
2. Ceyhan M, Yildirim I, Tekeli A, Yurdakok M, Us E, Altun B. A chryseobacterium meningosepticum outbreak observed in 3 clusters involving both neonatal and non-neonatal pediatric patients. *Am J Infect Control* 2008; **36**:453-7.
3. Zong Z. Biliary tract infection or colonization with *Elizabethkingia meningoseptica* after endoscopic procedures involving the biliary tract. *Intern Med* 2015; **54**:11-5.
4. González LJ, Vila AJ. Carbapenem resistance in *Elizabethkingia meningoseptica* is mediated by metallo-β-lactamase BlaB. *Antimicrob Agents Chemother* 2012; **56**: 1686-92.
5. Jiang X, Wang D, Wang Y, Yan H, Shi L, Zhou L. Occurrence of antimicrobial resistance genes sul and dfrA12 in hospital environmental isolates of *Elizabethkingia meningoseptica*. *World J Microbiol Biotechnol* 2012; **28**:3097-3102.