



CORRESPONDENCE

Arteriovenous fistula-related bacteremia caused by *Achromobacter xylosoxidans* in a uremic patient

Dear Editor,

Achromobacter xylosoxidans has been reported to cause intravascular catheter-related bacteremia in a hemodialysis unit.^{1,2} Here, we describe a uremic patient with recurrent *A. xylosoxidans* bacteremia due to infected aneurysm of arteriovenous (AV) fistula.

A 72-year-old female patient presented to the hospital with fever, chills, and a protruding mass-like lesion over the left arm AV fistula on December 8, 2013. The patient had hepatocellular carcinoma and underwent transhepatic arterioembolization 18 months prior to admission. She also had chronic renal failure and received hemodialysis through an AV fistula in the left forearm for 4 years. The first episode of *A. xylosoxidans* (Isolate A) bacteremia occurred on June 12, 2013. She received antibiotic therapy with ceftazidime 2 g/day intravenously for 14 days. Unfortunately, two additional episodes of bacteremia due to *A. xylosoxidans* were detected on July 29, 2013 (Isolate B), and October 15, 2013 (Isolate C) 2013. Physical examination revealed redness, swelling, local heat, and tenderness over the AV fistula site of the left forearm. Sonography examination found intravascular thrombus of the infected aneurysm of the left forearm. The patient underwent phlebectomy and surgical debridement of the intravascular thrombus. Culture of specimens of debrided thrombus (Isolate D) and two sets of blood cultures obtained from peripheral venous blood (Isolate E) all yielded *A. xylosoxidans*. The susceptibility profiles of the five isolates were determined by Becton Dickinson Phoenix, Arizona, USA (automachine for bacteria identification) were identical: resistant to aminoglycosides, aztreonam, ampicillin, cefepime, cefotaxime, flomoxef, ertapenem, ciprofloxacin, and levofloxacin, but susceptible to doripenem, meropenem, imipenem, cefoperazone/sulbactam, tigecycline, colistin, and trimethoprim–sulfamethoxazole. Pulse-field gel electrophoresis of the five isolates with digestion by *Xba*I

enzyme was performed.³ The pulsotypes of the five isolates were identical, indicating that they belonged to the same strains. The patient received combination therapy with intravenous colistin 2 MU/day and intravenous trimethoprim–sulfamethoxazole 160 mg/800 mg/day. Two sets of blood cultures taken 7 days after antibiotic treatment were negative and the patient received an 8-week course of antibiotic therapy. Whole body gallium scanning and bone scans were performed during hospitalization and two sets of blood cultures taken 4 weeks after discharge all revealed negative findings, indicating the absence of any metastatic lesions or relapses of bacteremia.

Although patients who receive hemodialysis are at a potential risk of methicillin-resistant *Staphylococcus aureus* bacteremia,^{1,2} Gram-negative bacteria, especially non-glucose-fermenting organisms, are increasingly emerging in nosocomial infection in immunocompromised patients.^{1,2,4,5} *A. xylosoxidans* is found in an aqueous environment, and is isolated from a wide range of clinical specimens.^{1,4,5} *A. xylosoxidans* is an opportunistic pathogen with relatively low virulence, but it can be the causative agent of complicated bacteremia and nosocomial infections.^{1,4,5} To the best of our knowledge, this recurrent infection in our hemodialysis patient with infected aneurysm of AV fistula due to *A. xylosoxidans* is the first case report. Many microbiological methods, such as antibiogram, biotyping, random amplified polymorphic DNA, pulse-field gel electrophoresis,^{1,3,4} have been proposed to identify *A. xylosoxidans*. The molecular typing techniques are preferred for differentiating strains in epidemiological and cluster studies.^{1,3,6}

Management of infected aneurysm of AV fistula or permanent catheter-related bacteremia is controversial.^{1,2,4} The decision to remove the catheter or surgical debridement is difficult, particularly in patients with limited venous access. The experience of AV fistula infection due to *A. xylosoxidans* is rare, therefore, clinicians should assess

the complications such as endocarditis, septic thrombosis, tunnel infection, biofilm formation, or metastatic seeding.^{1,4,5,7} Based on our experience of this patient, we suggest that patients with infected aneurysm of AV fistula due to *A. xylosoxidans* bacteremia can be successfully treated with systemic combination antimicrobial therapy plus phlebectomy with intravascular removal of thrombus.

Conflict of interest

The authors declare that there was no conflict of interest.

References

1. Tena D, Carranza R, Barbera JR, Valdezate S, Garrancho JM, Arranz M, et al. Outbreak of long-term intravascular catheter-related bacteremia due to *Achromobacter xylosoxidans* subspecies *xylosoxidans* in a hemodialysis unit. *Eur J Clin Microbiol Infect Dis* 2005;**24**:727–32.
2. Wu HS, Kuo SC, Chen LY, Chiang MC, Lin YT, Wang FD, et al. Comparison between patients under hemodialysis with community-onset bacteremia caused by community-associated and healthcare-associated methicillin-resistant *Staphylococcus aureus* strains. *J Microbiol Immunol Infect* 2013;**46**:96–103.
3. Amoureux L, Bador J, Siebor E, Taillefumier N, Fanton A, Neuwirth C. Epidemiology and resistance of *Achromobacter xylosoxidans* from cystic fibrosis patients in Dijon, Burgundy: first French data. *J Cystic Fibrosis* 2013;**12**:170–6.
4. Shie SS, Huang CT, Leu HS. Characteristics of *Achromobacter xylosoxidans* bacteremia in northern Taiwan. *J Microbiol Immunol Infect* 2005;**38**:277–82.
5. Teng SO, Ou TY, Hsieh YC, Lee WC, Lin YC, Lee WS. Complicated intra-abdominal infection caused by extended drug-resistant *Achromobacter xylosoxidans*. *J Microbiol Immunol Infect* 2009;**42**:176–80.
6. Alfizah H, Nordiah AJ, Rozaidi WS. Using pulse-field gel electrophoresis in the molecular investigation of an outbreak of *Serratia marcescens* infection in an intensive care unit. *Singapore Med J* 2004;**45**:214–8.
7. Wu WS, Chen CC, Chuang YC, Su BA, Chiu YH, Hsu HJ, et al. Efficacy of combination oral antimicrobial agents against biofilm-embedded methicillin-resistant *Staphylococcus aureus*. *J Microbiol Immunol Infect* 2013;**46**:89–95.

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