

CASE REPORT

A Case of Ventilator-Associated Pneumonia Caused by *Ewingella americana*: First Report from Turkey

Kenan Ecemiş¹, Serdar Gül¹, Emine Ecemiş¹, Ergin Ayaşlıoğlu¹, Yakup Türkel², Sedat Kaygusuz¹

¹ Kırıkkale University, Faculty of Medicine, Department of Clinical Microbiology and Infectious Diseases, Kırıkkale, Turkey

² Kırıkkale University, Faculty of Medicine, Department of Neurology, Kırıkkale, Turkey

ABSTRACT

Ewingella americana is a very rare cause of serious infections, especially in immunocompromised patients. We report a case of ventilator-associated pneumonia (VAP) in an intensive care unit patient, who was treated successfully with ceftriaxone. To the best of our knowledge, this is the first case of VAP due to *Ewingella americana* in the English literature. *J Microbiol Infect Dis* 2014; 4(3): 118-120

Key words: *Ewingella americana*, ventilator-associated pneumonia, intensive care unit

***Ewingella americana*'ya bağlı gelişen ventilator ilişkili pnömoni olgusu: Türkiye'den ilk vaka**

ÖZET

Ewingella americana özellikle immunsuprese hastalarda ciddi enfeksiyonların çok ender bir sebebidir. Biz bu çalışmada bir yoğun bakım hastasında seftriaksonla başarı ile tedavi edilen bir ventilator ilişkili pnömoni olgusu sunduk. Bizim bilgimize göre bu vaka İngilizce literatürde *Ewingella americana*'nın etken olarak bildirildiği ilk ventilatör ilişkili pnömoni (VİP) olgusudur.

Anahtar kelimeler: *Ewingella americana*, ventilatör ilişkili pnömoni, yoğun bakım ünitesi

INTRODUCTION

Ewingella americana, which belongs to the Enterobacteriaceae family, is an extremely rare cause of nosocomial bacteremia, peritonitis associated with peritoneal dialysis, and conjunctivitis.¹ Pneumonia caused by *Ewingella americana* were also reported in an outpatient.² and in an intensive care unit (ICU) patient.³ Here, we report a case of ventilator-associated pneumonia (VAP); to the best of our knowledge, this is the first such case of VAP due to *Ewingella americana* to be reported in the English literature.

CASE

A 55 year old, Caucasian, male patient, who were diagnosed as myasthenia gravis five months previously, was admitted to the University Hospital of Kırıkkale, Turkey with insomnia and shortness of breath. Thirty minutes after admission, he devel-

oped cardiopulmonary arrest due to the involvement of respiratory muscles. The patient responded to the cardiopulmonary resuscitation, and after endotracheal intubation, he was transferred to the ICU. At the admission, the patient did not have any physical or laboratory findings of infection. On the third day of admission, he developed fever and dyspnea. Purulent tracheal secretions were observed. On the physical examination, body temperature was 38.7°C, heart rate 102/min, respiratory rate 26/min and arterial blood pressure 110/70 mmHg. Physical examinations were unremarkable except crepitant crackles on the right lower zone of the lung. Laboratory findings revealed; 6.300 leukocytes/mm³ (86% neutrophils), platelets 170.000 / mm³, hemoglobin 11.4 g/dL, C-reactive protein 66 mg/L (reference range 0-5 mg/L) and normal hepatic and renal functions.

The postero-anterior chest X-ray showed infiltration at the right lower zone. The patient was diag-

Correspondence: Serdar Gül, Kırıkkale University, Faculty of Medicine, Department of Clinical Microbiology and Infectious Diseases, Kırıkkale, Turkey Email: serdargul@mynet.com

Received: 03.December.2014, Accepted: 23. December.2014

Copyright © Journal of Microbiology and Infectious Diseases 2014, All rights reserved

nosed as VAP. After blood, urine and tracheal aspirate cultures were obtained, the patient was treated empirically with meropenem (1 g every 8 hours) regarding to the antibiotic susceptibility pattern in the ICU. Tracheal aspirate culture revealed 1.000.000 cfu/ml non-hemolytic Gram-negative bacilli on blood agar plate and lactose-negative colonies on eosine methylene blue (EMB) agar plate after 24 hours incubation at 37°C. The isolate was identified as *Ewingella americana* by VITEK 2 automated system. Urine and blood cultures did not reveal any bacterial growth which were obtained during the initiation of antibacterial therapy. The strain was susceptible to ampicillin, amoxicillin/clavulanate, piperacillin/tazobactam, cefuroxime, ceftazidime, ceftriaxone, cefoperazone/sulbactam, ertapenem, imipenem, meropenem, amikacin, gentamicin, ciprofloxacin, trimethoprim /sulfamethoxazole. According to the antibiotic susceptibility pattern of the isolated bacteria, the meropenem therapy was de-escalated to ceftriaxone (1 g every 12 hours). On the second day of antibiotherapy, the patient defervesced, and the inflammation markers (C-reactive protein) declined. His antibiotic treatment was continued for 10 days. At the end of antibiotherapy the patient was still intubated due to his underlying condition, but he had no signs or symptoms of infection.

DISCUSSION

Ewingella americana was first described by Grimont and coworkers in 1983.⁴ It is a rare bacteria with low pathogenic potential and usually effects immunocompromised patients.²

It can cause peritonitis, conjunctivitis, pneumonia, bacteremia and sepsis.^{2,5-9} A patient who died due to Waterhouse-Friderichsen syndrome, showed growth of *Ewingella americana* in the post-mortem bacteriologic cultures, which shows the pathogenic potential of this bacteria.¹⁰ It may colonize in wounds and sputum without causing clinical infection.^{2,11} Sputum was reported as the most common isolation sample and bacteremia as the most common infections due to *Ewingella Americana*.²

Ventilator-associated pneumonia (VAP) is an infection that occurs in an ICU patient more than 48 hours after endotracheal intubation and mechanical ventilation. VAP remains a significant cause of patient morbidity and mortality.¹² Only one pneumonia case in an ICU patient caused by *Ewingella americana* has been reported to date, but this case was not defined as VAP.³ To our knowledge, our case is the first to be defined as VAP in the English lit-

erature. The strain was identified with VITEK-2 automated system and with this automatized system, more than %98 of the isolates can be correctly identified to the species level without any requirement of further testing.¹³

Reported sources of infections have been identified as catheters, contaminated ice bath used in cardiovascular surgery and the hands of health-care workers.^{8,14} Additionally, *Ewingella americana* caused an outbreak of pseudobacteremia owing to cross contamination of blood culture bottles with non-sterile blood collection tubes.⁶ In the present case, we carried out an extensive search to determine the source of infection. Hands and nasal cavities of the health-care workers who cared with the patient, the environment of the patient including the ventilation system, and the water circuit in the patient room were examined but the source of infection could not be identified.

Although *Ewingella americana* is generally susceptible to antibiotics, it can sometimes be multi-drug resistant.^{3,5,15} Our patient's isolate was susceptible to all antibiotics tested.

This case revealed that *Ewingella americana* can cause VAP, especially in immunocompromised patients. However, more information is needed to clarify the pathogenicity of *Ewingella americana*.

REFERENCES

1. Donnenberg MS. Enterobacteriaceae, Mandell GL, Bennett JE, Dolin R (EDS). Principles and Practice of Infectious Diseases 7th edition. Philadelphia: Elsevier-Churchill Livingstone 2815-2833,2010.
2. Ryou NH, Ha JS, Jeon DS, et al. A case of pneumonia caused by *Ewingella americana* in a patient with chronic renal failure. J Korean Med Sci 2005;20:143-145.
3. Bukhari SZ, Hussain WM, Fatani MI, Ashshi AM. Multi-drug resistant *Ewingella americana*. Saudi Med J 2008;29:1051-1053.
4. Devreese K, Claeys G, Verschraegen G. Septicemia with *Ewingella americana*. J Clin Microbiol 1992;30:2746-2747.
5. Pound MW, Tart SB, Okoye O. Multidrug-resistant *Ewingella americana*: a case report and review of the literature. Ann Pharmacother 2007;41:2066-2070.
6. Kati C, Bibashi E, Kokolina E, Sofianou D. Case of peritonitis caused by *Ewingella Americana* in a patient undergoing continuous ambulatory peritoneal dialysis. J Clin Microbiol 1999;37:3733-3734.
7. Maraki S. Acute conjunctivitis caused by *Ewingella americana*. J Pediatr Ophthalmol Strabismus 2012; 49 Online:e52-54.
8. Pien FD, Bruce AE. Nosocomial *Ewingella Americana* bacteremia in an intensive care unit. Arch Intern Med 1986;146:111-112.
9. Hassan S, Amer S, Mittal C, Sharma R. *Ewingella americana*: an emerging true pathogen. Case Rep Infect Dis 2012;2012:730720.

10. Tsokos M. Fatal. Waterhouse-Friderichsen syndrome due to *Ewingella americana* infection. *Am J Forensic Med Pathol* 2003;24:41-44.
11. Bear N, Klugman KP, Tobiansky L, Koornhof HJ. Wound colonization by *Ewingella americana*. *J Clin Microbiol* 1986;23:650-651.
12. Craven DE, Chroneou A. Nasocomial pneumonia, et al. *Principles and Practice of Infectious Diseases* 7th edition. Philadelphia: Elsevier-Churchill Livingstone 3717-3724;2010.
13. Nakasone I, Kinjo T, Yamane N, et al. Laboratory-based evaluation of the colorimetric VITEK-2 Compact system for species identification and of the Advanced Expert system for detection of antimicrobial resistances: VITEK-2 Compact system identification and antimicrobial susceptibility testing. *Diagn Microbiol Infect Dis* 2007;58:191-198.
14. Maertens J, Delforge M, Vandenberghe P, et al. Catheter-related bacteremia due to *Ewingella americana*. *Clin Microbiol Infect* 2001;7:103-104.
15. Stock I, Sherwood KJ, Wiedemann B. Natural antibiotic susceptibility of *Ewingella americana* strains. *J Chemother* 2003; 15:428-441.