

Acinetobacter baumannii Infection Should be Considered as the Most Troublesome Pathogens for Health Care Institutions in Karaj

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Received 2016 May 25; Revised 2016 August 28; Accepted 2016 September 10.

Abstract

Three cases were referred to the Rajaei hospital in Karaj, Iran, and the culture of lung secretions resulted in isolation of multidrug-resistant *Acinetobacter baumannii*. Although antibiotic treatment was started, all the three patients died. This report describes the clinical course of the illness. To the best of the authors' knowledge, no cases of multidrug resistant *Acinetobacter baumannii* have been reported previously in the Rajaei hospital, Karaj.

Keywords: Lung Secretion, Antibiotic Resistance, *Acinetobacter baumannii*

1. Introduction

The incidence of infection caused by antibiotic-resistant *Acinetobacter baumannii* has recently shown a rising trend in many health care settings, especially in ICUs. Moreover, the resistance of *A. baumannii* to various classes of antibiotics has significantly increased globally in recent years (1-3).

The organism commonly targets the critically ill patients. As reported by many scientists, hospital-acquired pneumonia is one of the most common nosocomial infections caused by this organism (3). However, infections involving the central nervous system, skin, and soft tissue and bone have also recently emerged as a major problem for many health care systems all over the world (4, 5). Unfortunately, the outcomes of patients with *A. baumannii* infections seem to be very poor because this organism is resistant to multiple classes of antimicrobial agents. Therefore, the mortality rate is as high as 43% among ICU admitted patients (6). The purpose of this study was to describe our experience of a case series of *A. baumannii* infection in a teaching hospital in Karaj.

2. Case Presentation

2.1. Case 1

The first case was a 91-year-old woman admitted to the hospital due to loss of consciousness and recognition; she was suctioned and intubated. She had a history of brain stroke. She had the following paraclinical test results on the day of admission: WBC = 8 cells and RBC: 3.72 (neutrophil = 82 lymphocyte = 15%). Auscultation of the lungs on the third day revealed mild wheezing, and a chest radiograph was taken. A lung secretion culture isolated *A. baumannii*.

The patient was started on clindamycin (600 TDS) and ceftriaxone (1g BID) antibiotics on the first day. She ultimately experienced an asthma attack and suffered a cardiopulmonary arrest. Intravenous (IV) meropenem (1 g/day) was added to the patient treatment protocol on day 10. Unfortunately, the patient died on day 1.

2.2. Case 2

A 28-year-old female with a history of rheumatoid arthritis and cardiomyopathy was admitted to the emergency department. She had the following paraclinical test results on the day of admission: WBC = (13PM: 3.3 and 17PM: 2.8), cells (neutrophils = 58, lymphocytes = 3), and LDH = 8.8 IU/L mg/dL.

After 48 hours, the patient was transferred to the intensive care unit (ICU) because of cardiopulmonary arrest and for respiratory support. She had loss of consciousness and recognition.

She was initially treated with prednisone, hydroxychloroquine, and sulfasalazine. This patient had been treated previously with various antibiotics at the time of diagnosis; for example, upon admission, she was initiated on intravenous (IV) meropenem (1 g/day). On the first day of admission, her pulmonary secretions increased; therefore, she was suctioned and intubated. A chest radiograph revealed auscultation of the lungs; similarly, a brain scan revealed edema and a lung scan revealed bilateral alveolar infiltration. Culturing of lung secretions yielded *A. baumannii*.

Subsequently, vancomycin (500 g BID) and then ceftriaxone (1 gr BID) were added to the patient treatment protocol. On the third day, ciprofloxacin (400 TDS) and ampicillin (2 gr q 4/h) were included. The patient was isolated, and on day three, she had a cardiac pulmonary arrest. The patient ultimately died on day four.

2.3. Case 3

A 69-year-old female presented to the emergency department with high fever. She was intubated and determined to have pericarditis, refractory hypotension, and low blood pressure. The patient was transferred to the ICU after 6 hours.

On the second day after admission to ICU, a chest radiograph revealed acute respiratory distress syndrome (ARDS). A bloody discharge was observed from the endotracheal tube and the sputum cultures grew *Klebsiella* spp. On day seven, antibiotic treatment was started with meropenem and vancomycin. On the 17th day of hospitalization, the pulmonary secretion continued, and a sputum culture revealed and confirmed *A. baumannii*. She developed pneumonia and an antibiotic regimen was started with ciprofloxacin (400 g BID). The patient died despite attempted cardiopulmonary and cerebral resuscitation, with a “probable” diagnosis of a pericarditis-associated coronary artery bypass graft (CABG) infection that showed a refractory progressive and positive culture, as well as respiratory infections in the ICU after heart surgery.

3. Discussion

Acinetobacter is an important cause of hospital infection and contributes considerably to morbidity and mortality all over the world. *Acinetobacter baumannii* has recently been associated with nosocomial infections (7, 8).

Prolong hospitalization, age, mechanical ventilation, trauma, admission to an intensive care unit, and the use

of pulsatile lavage wound irrigation are the important risk factors for hospital-acquired *A. baumannii* infections. A recent increase in MDR *A. baumannii* infections have resulted in the use of colistin or polymyxin B for salvage therapy in severe cases like pneumonia, meningitis, and orthopedic device infections in documented case reports. Therefore, *A. baumannii* continues to emerge as an important cause of infections associated with trauma and orthopedic devices.

One important aspect of our patients was that *A. baumannii* persisted despite active therapy against this organism, again emphasizing that *A. baumannii* infections are inherently more difficult to eradicate.

In conclusion, *A. baumannii* is an important opportunistic pathogen of nosocomial infections, especially in patients who experience prolonged hospitalization, antibiotic exposure, and device-related infections. Hence, alternative therapeutic options are urgently needed to treat patients with *A. baumannii* infections. Our report suggests that *A. baumannii* is increasingly causing lung infections.

Acknowledgments

We acknowledge family members of the patients and hospital personnel for their collaboration. The authors received no funding. This manuscript was approved by the ethics committee of Alborz University of Medical Sciences.

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