Community-acquired *Acinetobacter baumannii* pneumonia

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**ABSTRACT**

*Acinetobacter baumannii* has emerged as one of the most common causes of multi-drug resistant nosocomial pneumonia. We reported a fatal case of community-acquired bacteremic *A. baumannii* pneumonia which, in contrast to the nosocomial counterpart, is uncommon but with mortality despite *in vitro* susceptible to many common antimicrobial agents. (*J Infect Dis Antimicrob Agents* 2012;29:157-60.)

**Note:** This case had been presented and discussed in the Interhospital Case Conference on Infectious Disease (ICCID), 17 May 2012, Bangkok, Thailand.

**CASE REPORT**

A 56-year-old man was admitted into Songklanagarind Hospital on 20 March 2012 after having fever and dyspnea for one day. The patient had a history as a 40 pack-year cigarette smoker. A salbutamol inhaler was used intermittently for dyspneic episodes but with an unknown frequency. Until a day prior to admission, his health was otherwise unremarkable. On the day prior to admission he developed fever and shortness of breath with productive yellowish sputum. His symptoms temporarily improved after 3 doses of inhaled salbutamol. That evening he was able to work as a school security guard. However, his coworker found him unconscious with worsened dyspnea the next morning. He was then rushed to the hospital.

At the emergency room, he was found to be unconscious and cyanotic with a respiratory rate of 38 breaths per minute and fever of 38.4°C (101.1°F). His blood pressure and pulse rate were 61/35 mmHg and 122 beats per minute respectively. Fine crackles were heard at the base of his right lung. The neurological examination revealed a semicomatose man who responded to deep pain stimulation by just opening his eyes. There was no neurological localizing sign or stiffness of neck. The remainder of the physical examination was normal. An endotracheal tube was immediately inserted along with intravenous fluids and vasopressor administration due to respiratory failure and hypotension.

The initial laboratory studies disclosed the following: a white blood cell count of 4,320 cell/mm³

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(N 60%, L 20%, M 12%), hematocrit of 48.7% and a platelet count of 146,000/mm$^3$. The blood urea nitrogen level was 17.4 mg/dL and the creatinine level was 2.47 mg/dL. The liver function tests showed an albumin level of 2.8 g/dL. The bilirubin, aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphatase (ALP) were within normal limits. A chest radiograph revealed focal patchy infiltration in the right lower lobe (Figure 1). Arterial blood gas during 0.4% FiO$_2$ mechanical ventilation showed a pH of 7.14, a pCO$_2$ of 25 mmHg and a pO$_2$ of 71 mmHg.

He was diagnosed with severe community-acquired pneumonia with multi-organ dysfunction. Ceftazidime and levofloxacin were given intravenously. A sputum gram stain showed numerous gram-negative coccobacilli (Figure 2).

Despite a high dose of vasopressors and 100% oxygen supplementation, the patient remained hypotensive and hypoxic. Laboratory results showed evidence of disseminated intravascular coagulation with uncorrectable metabolic acidosis. He died at 30 hours after hospitalization. Two sets of blood and the sputum cultures subsequently reported growth of *Acinetobacter baumannii* which were susceptible to ciprofloxacin, co-trimoxazole, ceftazidime, imipenem, amikacin and gentamicin (Table 1).

**DISCUSSION**

*Acinetobacter baumannii* has emerged as a significant pathogen in nosocomial infections particularly affecting patients in the intensive care unit.$^{2,3}$ *A. baumannii* pneumonia is one of the most common hospital-acquired infections and often is multi-drug resistant.$^4$ In contrast, community-acquired *A. baumannii* pneumonia is uncommon.$^{5-7}$ There have been 6 case series reports with a total of 80 patients between 1973 and 2006. Fifty-one patients had pneumonia and 29 patients were bacteremic. Forty-five (56%) patients died from the infection.$^8$ Our patient who had community-acquired bacteremic *A. baumannii* pneumonia had a fulminating course resulting in fatality within two days. A mortality rate of 64% among similar cases of bacteremic *A. baumannii* pneumonia was reported from Australia. All cases had fulminant courses of respiratory distress and died within

![Figure 1. Chest radiograph of the patient shows focal patchy infiltration in the right lower lobe.](image1.png)

![Figure 2. Sputum gram stain showed numerous gram-negative coccobacilli.](image2.png)
Table 1. Minimal inhibitory concentrations (MICs) of various antimicrobial agents by E-test of *A. baumannii* isolated from the patient’s blood.

<table>
<thead>
<tr>
<th>Antimicrobial agents</th>
<th>MIC (mg/dL)</th>
<th>MIC breakpoints (mg/dL)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin</td>
<td>0.125</td>
<td>≤ 1</td>
</tr>
<tr>
<td>Co-trimoxazole</td>
<td>0.25</td>
<td>≤ 2/38</td>
</tr>
<tr>
<td>Ceftazidime</td>
<td>3</td>
<td>≤ 8</td>
</tr>
<tr>
<td>Imipenem</td>
<td>0.38</td>
<td>≤ 4</td>
</tr>
<tr>
<td>Amikacin</td>
<td>3</td>
<td>≤ 16</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>1</td>
<td>≤ 4</td>
</tr>
</tbody>
</table>

*Interpretation according to performance standards for antimicrobial susceptibility testing (CLSI 2011)*

In Thailand, only 1.4% of hospitalized, severe community-acquired pneumonia were caused by *A. baumannii*. The most common pathogens were *Burkholderia pseudomallei* (29%), *Streptococcus pneumoniae* (20%), *Klebsiella pneumoniae* (19%) and *Haemophilus influenzae* (11%).

The current guideline for treatment of severe community-acquired pneumonia, recommends a combination of β-lactam antimicrobial agents (cefotaxime, ceftriaxone, or ampicillin/sulbactam) plus either azithromycin or a fluoroquinolone as the empirical antimicrobial agents. However, in Thailand, this regimen requires a modification to ceftazidime plus a respiratory fluoroquinolone in order to cover for the high incidence of *Burkholderia pseudomallei*. Community-acquired *A. baumannii*, in contrast to the nosocomial *A. baumannii* counterparts, is usually susceptible to ampicillin/sulbactam, ciprofloxacin, co-trimoxazole, aminoglycosides, ceftazidime and imipenem. Despite this susceptibility and treatment with these common antimicrobial agents, the mortality rate in community-acquired *A. baumannii* pneumonia, for as yet an unknown reason, remains unacceptably high and needs further study.
References


