Risk Factors for Death from Carbapenem-Resistant Acinetobacter baumannii (CRAb) Bacteremia at 13 US Medical Centers, 2010-14

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Objectives

- Describe the characteristics of adults with carbapenem-resistant Acinetobacter baumannii (CRAb) bacteremia at US medical centers during a 5-year period
- Determine risk factors for death at 30 days in this population
- Determine whether use of carbapenems affects mortality

Background

- In 2013, US Centers for Disease Control and Prevention (CDC) identified multidrug-resistant Acinetobacter as a serious public health threat.
- National Healthcare Safety Network at the CDC found 62.6% of all CLABSI with Acinetobacter were carbapenem-resistant.2
- Crude mortality for CRAb bacteremia has been reported between 34-43%.3
- Optimal treatment regimens for CRAb not yet defined

Methods

- Multicenter study at 17 medical centers
- Retrospective medical record review of patients with a microbiologically laboratory bloodstream infection from 2010-14
- Included 60 cases of CRAb bacteremia at 13 centers in 7 states from 2010-2014
- Identified resistance based on individual center’s microbiological testing standards
- Data included demographics, medical history, recent exposures to antibiotics, vital signs & laboratory data
- Data recorded using standardized form and entered into REDCap web application
- Bivariable analysis to assess risk factors for mortality at 30 days (chi-square, Fisher exact, t-test, or Wilcoxon test as appropriate)

Table 1. Patient Characteristics (n = 95)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Male (n = 56)</th>
<th>Female (n = 39)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>29 (26-29)</td>
<td>41 (38-43)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>77 (70-84)</td>
<td>81 (73-90)</td>
<td>0.35</td>
</tr>
<tr>
<td>Diabetes</td>
<td>9 (16)</td>
<td>8 (21)</td>
<td>0.56</td>
</tr>
<tr>
<td>Immunosuppression</td>
<td>19 (34)</td>
<td>16 (41)</td>
<td>0.21</td>
</tr>
<tr>
<td>Hemodialysis</td>
<td>7 (13)</td>
<td>2 (5)</td>
<td>0.02</td>
</tr>
<tr>
<td>Antibiotic use</td>
<td>20 (36)</td>
<td>13 (33)</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Results

- 95 cases of CRAb bacteremia at 13 centers in 7 states from 2010-2014
- 4 centers had no cases during study period
- Most common source of bacteremia was IV catheter (41.5%)
- 50 cases survived >72 hours after diagnosis and received >48 hours of effective antibiotic
- 30-day mortality in this group was 26/60 (43.3%)

Conclusions

- Addition of carbapenem was not associated with decrease in 30-day mortality
- 30-day mortality was higher in patients with baseline CKD and in those who developed respiratory failure or need for vasopressors; age and immunocompromised status were not associated with mortality

Future Directions

- Identify regional variation in treatment regimens
- Determine impact of colistin therapy on mortality
- Analysis of susceptibility testing & carbapenem resistance mechanisms

References