Treatment and Outcomes of Daptomycin-Non-susceptible MRSA Bloodstream Infection

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Treatment and Outcomes of Daptomycin-Nonsusceptible Methicillin-Resistant Staphylococcus aureus Bloodstream Infections

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BACKGROUND

- Methicillin-resistant *Staphylococcus aureus* infections are serious infections that are becoming more common and more difficult to treat.

- Clinical or microbiological failures occur in a substantial proportion of invasive MRSA infections treated with vancomycin. Therapy failure is associated worse clinical outcomes.

- The IDSA recommends change in therapy when vancomycin failure occurs, with daptomycin being a possible alternative if susceptible.

- However, cases of therapy failure associated with the emergence of daptomycin-nonsusceptible (DNS) MRSA strains have been documented.
OBJECTIVE:

- The data to guide the management of patients with DNS MRSA bloodstream infection is limited.

- This study describes the treatment and outcomes of patients with DNS MRSA bloodstream infections at our center.
METHODS:

- We conducted a retrospective review of patients with DNS (daptomycin MIC >1.0 µg/mL) MRSA BSI between 9/24/2005 and 3/31/2018.

- The variables collected were: source of BSI, inpatient and discharge antibiotic therapy, BSI duration, in-hospital and 90-day mortality, and 90-day MRSA BSI recurrence.

- Inpatient therapy = therapy administered for the longest number of consecutive days from index blood culture during hospitalization.

- Discharge therapy = therapy used post-discharge or therapy administered on the date of expiration.
RESULTS:

- A total of 32 non-duplicate patients were identified.
- One patient with an inaccessible chart was excluded.
- The source of BSI was:
  - Endovascular = 9 (29%) pts,
  - Secondary BSI = 14 (45%)
  - Central-line associated = 3 (10%),
  - Unclear/multiple = 5 (16%).
<table>
<thead>
<tr>
<th>Inpatient therapy</th>
<th>Discharge therapy (n)</th>
<th>In-hospital mortality n(%)</th>
<th>90-day mortality n(%)</th>
<th>Mean BSI duration (days)</th>
<th>90-day BSI recurrence n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>van (10)</strong></td>
<td>van (8) cef (1)</td>
<td>3(30)</td>
<td>4(40)</td>
<td>2.9</td>
<td>3(30)*</td>
</tr>
<tr>
<td></td>
<td>dap + cef (1)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td><strong>dap + cef (5)</strong></td>
<td>cef + dap (3)</td>
<td>0(0)</td>
<td>0(0)*</td>
<td>4.4</td>
<td>1(20)**</td>
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<tr>
<td></td>
<td>cef + van (1)</td>
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<tr>
<td></td>
<td>van (1)</td>
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<tr>
<td><strong>lin ± gen ± rif (5)</strong></td>
<td>lin (3)</td>
<td>1(20)</td>
<td>3(60)</td>
<td>6.8</td>
<td>1(20)</td>
</tr>
<tr>
<td></td>
<td>van + sxt (1)</td>
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</tr>
<tr>
<td></td>
<td>quin/dal (1)</td>
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<tr>
<td><strong>other (11)</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td>6(26)</td>
<td>11(35)</td>
<td>4.4</td>
<td>7(23)</td>
</tr>
</tbody>
</table>
RESULTS:

- A total of 24 different antibiotic regimens were used to treat DNS MRSA BSI in this cohort.

- Vancomycin monotherapy was the most commonly used regimen, followed by daptomycin + ceftaroline.

- The majority of the patients received at least two different regimens for therapy of the DNS MRSA BSI.
CONCLUSIONS:

✓ A wide variation in the therapy of DNS MRSA BSI was seen in this cohort, which makes it difficult to draw a convincing conclusion regarding the optimal treatment.

✓ This further highlights the need of evidence-based data to guide the management of such difficult to treat infection.

✓ In our cohort, vancomycin monotherapy was the most commonly used therapy.
**FUTURE DIRECTIONS:**

- Prospective randomized trials.

- In vitro antibiotic synergy studies and studies looking at the activity of other antibiotics against the DNS MRSA isolates.

- DNA sequencing to determine the genetic basis for daptomycin nonsusceptibility.
REFERENCES:

