Background

• Antimicrobial resistance in Gram-negative bacteria, particularly carbapenem-resistant Enterobacteriaceae (CRE), is one of the most critical challenges in infectious diseases.

• Meropenem with vaborbactam (MVB) is a novel beta-lactamase inhibitor combined with meropenem, a well-established antipseudomonal carbapenem that has activity against CRE.

• MVB received Food and Drug Administration (FDA) approval for the treatment of complicated urinary tract infections (cUTI) and acute pyelonephritis (AP) caused by susceptible organisms in August, 2017. However, evidence regarding MVB use in non-FDA approved indications, particularly bacteremia is rather limited.

The objective of this analysis was to evaluate the clinical and safety outcomes for patients treated with MVB for CRE bacteremia.

Methods

• Multi-site at the Detroit Medical Center, retrospective cohort study from August, 2018 to March, 2019.

• Inclusion criteria: Age ≥ 18 years, prior antibiotics and safety outcomes for patients treated with MVB for CRE bacteremia.

• Exclusion criteria: Age < 18 years, no prior antibiotics.

Clinical success was defined as survival, resolution of signs and symptoms of infection and absence of recurrence at 30 days following the onset of infection.

• Baseline clinical and infection characteristics were recorded.

• All analysis performed using SPSS Statistics, IBM SPSS software, version 25.0 (IBM Corp., Armonk, NY).

• Clinical success was achieved in 100% of evaluable patients treated with MVB for bacteremia.

• MVB appeared to be safe, well tolerated and improved patients' outcomes. Studies with longer follow up, more patients, various indications and other non CRE infections are required to assess the role of MVB in comparison to other anti-CRE agents.

Results

Table 1. Description of cases

<table>
<thead>
<tr>
<th>Case</th>
<th>Age / sex</th>
<th>Pathogen</th>
<th>Prior antibiotics</th>
<th>Source</th>
<th>Total days</th>
<th>Initial susceptibility with MVB</th>
<th>Microbiological Success</th>
<th>Resolution of signs and symptoms</th>
<th>30-day survival</th>
<th>Any recurrence</th>
<th>30-day recurrence or readmission</th>
<th>Clinical Success</th>
<th>Susceptibilities (MIC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>63 M</td>
<td>Enterobacter cloacae</td>
<td>No</td>
<td>Primary Bacteremia</td>
<td>S</td>
<td>Yes</td>
<td>1 day</td>
<td>Improvement</td>
<td>Yes</td>
<td>Yes</td>
<td>Resolution but no recurrence</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>27 M</td>
<td>Escherichia coli</td>
<td>No</td>
<td>Primary Bacteremia</td>
<td>S</td>
<td>Yes</td>
<td>1 day</td>
<td>Improvement</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>61 M</td>
<td>Klebsiella pneumoniae</td>
<td>No</td>
<td>UTI</td>
<td>S</td>
<td>Yes</td>
<td>No</td>
<td>Improvement</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>43 M</td>
<td>Klebsiella pneumoniae</td>
<td>No</td>
<td>UTI</td>
<td>S</td>
<td>Yes</td>
<td>2 day</td>
<td>Improvement</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>25 M</td>
<td>Klebsiella pneumoniae</td>
<td>No</td>
<td>Therapeutic catheter</td>
<td>S</td>
<td>Yes</td>
<td>4 days</td>
<td>Improvement</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 2. Baseline Criteria

<table>
<thead>
<tr>
<th>1. Demographic and Clinical Characteristics (%)</th>
<th>No. of male participants (%)</th>
<th>African American (%)</th>
<th>Comorbid conditions (%)</th>
<th>Chronic renal disease (%)</th>
<th>Long-term diabetes, insulin or GORD (%)</th>
<th>Diabetes (%)</th>
<th>Liver disease (%)</th>
<th>Heart failure (%)</th>
<th>Chronic obstructive pulmonary disease (%)</th>
<th>Invasive infection (%)</th>
<th>Chronic Characteristic, median (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (yr) 20 (18-60)</td>
<td>43 (25-65)</td>
<td>5 (100%)</td>
<td>5 (100%)</td>
<td>6 (40%)</td>
<td>3 (50%)</td>
<td>1 (100%)</td>
<td>1 (100%)</td>
<td>1 (100%)</td>
<td>1 (100%)</td>
<td>1 (100%)</td>
<td>3 (18) (6-20)</td>
</tr>
<tr>
<td>No of patients (%) 43 (%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
<td>43 (100%)</td>
</tr>
</tbody>
</table>

Figure 1. Targeted pathogens

Figure 2. Clinical Outcomes

Results

Conclusions

• Clinical success was achieved in 100% of evaluable patients treated with MVB for bacteremia.

• MVB appeared to be safe, well tolerated and improved patients’ outcomes. Studies with longer follow up, more patients, various indications and other non CRE infections are required to assess the role of MVB in comparison to other anti-CRE agents.

References


Disclosures

The study was supported by an investigator initiated grant from Melinta.