Activity of Ceftazidime-Avibactam and Comparator Agents Tested Against Isolates from Europe-Mediterranean Region Surveillance (2011)

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Abstract

Background: The in vivo activity of ceftazidime (CAZ)-avibactam (AVI) and comparator agents in the treatment of serious Gram-negative infections is of great clinical importance.

Methods: A total of 712 bacterial isolates were recovered from patients at all 8 sentinel centers (373 Enterobacteriaceae, 255 P. aeruginosa, 76 Acinetobacter spp., 21 H. influenzae, and 3 S. marcescens) in 12 European countries. In vitro susceptibility testing was performed by agar dilution according to CLSI guidelines using standard inocula and the broth microdilution dilution method for P. aeruginosa. CAZ-AVI (MIC in µg/mL) was tested against selected Enterobacteriaceae and P. aeruginosa strains.

Conclusions: CAZ-AVI exhibited in vitro activity against carbapenem-resistant Enterobacteriaceae (CRE) strains and P. aeruginosa, which were usually resistant to comparator agents like meropenem (MIC > 16 µg/mL). The cephalosporin/ β-lactamase inhibitor combination was effective against ESBL producers, including P. aeruginosa.

Introduction

Some bacterial strains have the ability to accumulate multiple resistance determinants as evidenced by the presence of multiple resistance genes encoding resistance to individual antibiotics. The emergence of multidrug-resistant bacterial strains has led to the development of new treatment strategies to better combat these infections. The in vitro activity of CAZ-AVI was evaluated against selected bacterial strains using the broth microdilution method.

Materials and Methods

Clinical isolates from various sources were collected from patients at all sentinel centers located in 12 countries in Europe. Isolates were identified and susceptibility testing was performed by broth microdilution according to CLSI guidelines using standard inocula and the broth microdilution dilution method for P. aeruginosa. CAZ-AVI was tested in vitro against selected Enterobacteriaceae and P. aeruginosa strains.

Results

A total of 712 bacterial isolates were collected for Enterobacteriaceae, 255 P. aeruginosa, 76 Acinetobacter spp., 21 H. influenzae, and 3 S. marcescens. CAZ-AVI exhibited in vitro activity against Enterobacteriaceae and P. aeruginosa. The strain was usually resistant to comparator agents like meropenem (MIC > 16 µg/mL). CAZ-AVI was effective against ESBL producers, including P. aeruginosa.

Conclusions

CAZ-AVI exhibited in vitro activity against CRE strains and P. aeruginosa, which were usually resistant to comparator agents like meropenem (MIC > 16 µg/mL). The cephalosporin/ β-lactamase inhibitor combination was effective against ESBL producers, including P. aeruginosa.

Table 1. Summary of in vitro activity of ceftazidime-avibactam and comparator agents against selected Enterobacteriaceae and P. aeruginosa isolates from the European and Mediterranean Region (2011).

<table>
<thead>
<tr>
<th>Organism</th>
<th>CAZ-AVI</th>
<th>Meropenem</th>
<th>Piperacillin/tazobactam</th>
<th>Ciprofloxacin</th>
<th>Amikacin</th>
<th>Piperacillin/tazobactam</th>
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<tr>
<td>Acinetobacter</td>
<td>4.0</td>
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<td>&gt;128</td>
<td>≤0.06</td>
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Table 2. Summary of in vitro activity of ceftazidime-avibactam and comparator agents against isolates from the European and Mediterranean region (2011).

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Conclusions

• CAZ-AVI exhibited in vitro activity against CRE strains and P. aeruginosa, which were usually resistant to comparator agents like meropenem (MIC > 16 µg/mL).

References

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