Antimicrobial Activity of Ceftaroline Tested against Contemporary (2012) Bacteria Isolated from Community-Acquired Respiratory Tract Infections, Including Oxacillin-resistant S. aureus

HS SADER, RK FLAMM, RN JONES
JHMI Laboratories, North Liberty, Iowa, USA

Background: Ceftaroline fosamil was approved by the FDA in 2010 for the treatment of community-acquired pneumonia (CAP). It is active against aerobic gram-positive and gram-negative pathogens causing community-acquired respiratory tract infections (CARTI). Ceftaroline has shown bactericidal activity against gram-positive and common gram-negative bacteria. We evaluated the in vitro potency and spectrum of Ceftaroline against contemporary (2012) bacteria isolated from CARTI.

Methods: A total of 1,743 unique patient isolates were collected from CARTI in 163 USA medical centers in 2012. Susceptibility (S) was tested by CLSI broth microdilution methods against P. aeruginosa, E. coli, Klebsiella spp., Staphylococcus aureus, and Haemophilus influenzae. We evaluated the in vitro activity and confirmed at the monitoring participant medical center and/or CLSI laboratory.

Results: CPT (MIC50, 0.015-0.12 µg/mL) was 8-fold more potent than ceftriaxone (MIC50, 0.06-0.5 µg/mL) against S. aureus (MIC50, 0.015-0.5 µg/mL), but these in vitro results are consistent with clinical data that show CPT fosamil to be a valuable agent for treatment of CARTI.

Abstract

Ceftriaxone is a cephalosporin with broad-spectrum in vitro bactericidal activity. This study evaluated the in vitro potency and spectrum of Ceftaroline against contemporary (2012) bacteria isolated from community-acquired respiratory tract infections (CARTI).

Methods

Organism collection

Unique patient isolates were collected from 163 USA medical centers in 2012. A total of 1,743 organisms were collected, including 720 S. pneumoniae (92.2% susceptible), 403 E. coli (95.9% susceptible), and 622 S. aureus (96.3% susceptible).

Methods: brothmicrodilution method performed according to the Clinical and Laboratory Standards Institute (CLSI) guidelines. Minimum inhibitory concentrations (MICs) were interpreted as susceptible (S) when ≤0.06/1 µg/mL, intermediate (I) when ≤0.5/2 µg/mL, or resistant (R) when >0.5/2 µg/mL. In vitro results are consistent with clinical data that show CPT fosamil to be a valuable agent for treatment of CARTI.

Results

<table>
<thead>
<tr>
<th>Organism</th>
<th>CPT</th>
<th>Ceftriaxone</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. aureus</td>
<td>≤0.06/1 µg/mL</td>
<td>≤0.06-0.5 µg/mL</td>
</tr>
<tr>
<td>E. coli</td>
<td>≤0.06-0.5 µg/mL</td>
<td>≤0.06-0.5 µg/mL</td>
</tr>
<tr>
<td>S. pneumoniae</td>
<td>≤0.06/1 µg/mL</td>
<td>≤0.06-0.5 µg/mL</td>
</tr>
</tbody>
</table>

Conclusions

These in vitro results are consistent with clinical data that show CPT fosamil to be a valuable agent for treatment of CARTI.

Acknowledgments

This study was supported by Lundbeck, Inc., Pfitzer, Inc., and Pfizer Inc.

References

2. CLSI Breakpoints for Antimicrobial Susceptibility Testing. M100-S22. CLSI, Wayne, PA.

IDWEEK 2013 890

Antimicrobial Activity of Ceftaroline Tested against Contemporary (2012) Bacteria Isolated from Community-Acquired Respiratory Tract Infections, Including Oxacillin-resistant S. aureus

HS SADER, RK FLAMM, RN JONES
JHMI Laboratories, North Liberty, Iowa, USA

Background: Ceftaroline fosamil was approved by the FDA in 2010 for the treatment of community-acquired pneumonia (CAP). It is active against aerobic gram-positive and gram-negative pathogens causing community-acquired respiratory tract infections (CARTI). Ceftaroline has shown bactericidal activity against gram-positive and common gram-negative bacteria. We evaluated the in vitro potency and spectrum of Ceftaroline against contemporary (2012) bacteria isolated from CARTI.

Methods: A total of 1,743 unique patient isolates were collected from CARTI in 163 USA medical centers in 2012. Susceptibility (S) was tested by CLSI broth microdilution methods against P. aeruginosa, E. coli, Klebsiella spp., Staphylococcus aureus, and Haemophilus influenzae. We evaluated the in vitro activity and confirmed at the monitoring participant medical center and/or CLSI laboratory.

Results: CPT (MIC50, 0.015-0.12 µg/mL) was 8-fold more potent than ceftriaxone (MIC50, 0.06-0.5 µg/mL) against S. aureus (MIC50, 0.015-0.5 µg/mL), but these in vitro results are consistent with clinical data that show CPT fosamil to be a valuable agent for treatment of CARTI.

Abstract

Ceftriaxone is a cephalosporin with broad-spectrum in vitro bactericidal activity. This study evaluated the in vitro potency and spectrum of Ceftaroline against contemporary (2012) bacteria isolated from community-acquired respiratory tract infections (CARTI).

Methods

Organism collection

Unique patient isolates were collected from 163 USA medical centers in 2012. A total of 1,743 organisms were collected, including 720 S. pneumoniae (92.2% susceptible), 403 E. coli (95.9% susceptible), and 622 S. aureus (96.3% susceptible).

Methods: brothmicrodilution method performed according to the Clinical and Laboratory Standards Institute (CLSI) guidelines. Minimum inhibitory concentrations (MICs) were interpreted as susceptible (S) when ≤0.06/1 µg/mL, intermediate (I) when ≤0.5/2 µg/mL, or resistant (R) when >0.5/2 µg/mL. In vitro results are consistent with clinical data that show CPT fosamil to be a valuable agent for treatment of CARTI.

Results

<table>
<thead>
<tr>
<th>Organism</th>
<th>CPT</th>
<th>Ceftriaxone</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. aureus</td>
<td>≤0.06/1 µg/mL</td>
<td>≤0.06-0.5 µg/mL</td>
</tr>
<tr>
<td>E. coli</td>
<td>≤0.06-0.5 µg/mL</td>
<td>≤0.06-0.5 µg/mL</td>
</tr>
<tr>
<td>S. pneumoniae</td>
<td>≤0.06/1 µg/mL</td>
<td>≤0.06-0.5 µg/mL</td>
</tr>
</tbody>
</table>

Conclusions

These in vitro results are consistent with clinical data that show CPT fosamil to be a valuable agent for treatment of CARTI.

Acknowledgments

This study was supported by Lundbeck, Inc., Pfitzer, Inc., and Pfizer Inc.