Antimicrobial Activity of Ceftaroline Tested Against Streptococci from United States (USA) and European (EU) Medical Centers: Results from the Ceftaroline Surveillance Program

R.N. JONES, H.S. SADER, D. BIEK, I. CRITCHLEY
3UM Laboratories, North Liberty, IA; Teica Inc., Oakland, CA (a wholly-owned subsidiary of Forest Pharmaceuticals, Inc. New York, NY)

IACA 2009
688 SE Ninth Street, IA 52323-6553
www.ymilabsa.com
319.665.3577, 319.665.3371
ronald-jones@ymilabsa.com

E-190

Introduction

Although hematogenous streptococcal infections are a major health problem associated with skin and soft-tissue infections, the rate of penicillin-resistant viridans group streptococci (PGVGS) has also increased. PGVGS can also be isolated from the bloodstream, which limits the use of penicillin as the therapeutic agent of choice against these gram-positive pathogens, including enterococci strains.

Despite the high prevalence of penicillin-resistant pneumococci, the susceptibility rates to newer agents, such as ceftriaxone and ceftaroline, are generally lower in the USA compared to Europe.

Materials and Methods

Organisms were collected from medical centers located in the USA and Europe.

Table 1. In Vitro Activity of Ceftaroline and Selected Antimicrobial Agents Tested Against Streptococcal Isolates from the USA (2008).

<table>
<thead>
<tr>
<th>Organism (no. tested)/agent</th>
<th>Penicillinb</th>
<th>Ceftriaxone</th>
<th>Amoxicillin/clavulanate</th>
<th>Azithromycin</th>
<th>Clarithromycin</th>
<th>Clindamycin</th>
<th>Levofloxacin</th>
<th>Trimethoprim/sulfamethoxazole</th>
<th>Vancomycin</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. pneumoniae (41)</td>
<td>0.008-1 µg/mL</td>
<td>≤1 µg/mL</td>
<td>≤1 µg/mL</td>
<td>≤0.5 µg/mL</td>
<td>&gt;4 µg/mL</td>
<td>≤0.06 µg/mL</td>
<td>≤0.5 µg/mL</td>
<td>&gt;2 µg/mL</td>
<td>≤1 µg/mL</td>
</tr>
<tr>
<td>Sensitivity rates</td>
<td>73.3-93.3%</td>
<td>91.4-96.7%</td>
<td>79.8-99.4%</td>
<td>86.3-98.0%</td>
<td>61.6-99.4%</td>
<td>91.2-97.3%</td>
<td>90.8-99.4%</td>
<td>88.9-97.3%</td>
<td>99.4-99.4%</td>
</tr>
</tbody>
</table>

Results

The highest ceftriaxone MIC values observed among penicillin-susceptible S. pneumoniae (MIC, 0.12-1 µg/mL) and penicillin-resistant S. pneumoniae (MIC, 0.03-16 µg/mL). The highest MICs for ceftriaxone were observed against S. pneumoniae, S. pyogenes, and S. agalactiae.

Ceftaroline was also very active against all penicillin-susceptible strains, with MICs of 0.03-0.25 µg/mL. Ceftriaxone MIC values ranged from 0.06-1 µg/mL, cefuroxime MIC values ranged from 0.5-8 µg/mL, and imipenem IC50 values ranged from 0.015-0.3 µg/mL.

Conclusions

Ceftaroline exhibited broad-spectrum activity and high potency against streptococci recently collected from patients in the USA and Europe.

Acknowledgement

Amended Abstract

Background: Ceftaroline, a novel broad-spectrum cephalosporin with activity against penicillin-susceptible and -resistant contemporary clinical enterococcal strains, is being developed for the treatment of infections due to penicillin-resistant S. pneumoniae and other S. pyogenes group streptococci, as well as common gram-negative pathogens. Ceftaroline is currently being evaluated for the treatment of penicillin-susceptible and -resistant pneumococci caused to penicillin-positive pathogens, including streptococci, and enterococci, as well as common gram-negative species, including enterococci and indole-positive enterobacteria.

Ceftaroline is a novel, potent, broad-spectrum cephalosporin exhibiting broad-spectrum activity against penicillin-resistant pneumococci, including methicillin-resistant Staphylococcus aureus (MRSA) and methicillin-resistant C. albicans clinical isolates, as well as common gram-negative pathogens. Ceftaroline is currently being evaluated for the treatment of infections caused by penicillin-positive pathogens, including streptococci, and enterococci, as well as common gram-negative species, including enterococci and indole-positive enterobacteria.

Ceftaroline exhibited a broad range of activity and high potency against streptococci recently collected from patients in the USA and European medical centers.

Ceftaroline was highly active against streptococci from the USA (MIC, ≤0.06-0.5 µg/mL) and EU (MIC, ≤0.06-1 µg/mL). Against β-lactam agents tested. Ceftaroline (MIC50, 0.5 µg/mL) or 16-fold more potent than ceftriaxone (MIC50, 1-2 µg/mL) breakpoints) were generally lower in the USA compared to EU.

Ceftaroline exhibited broad-spectrum activity and high potency against streptococci recently collected from patients in the USA and Europe. Ceftaroline (MIC50, 0.5 µg/mL) or 16-fold more potent than ceftriaxone (MIC50, 1-2 µg/mL) breakpoints) were generally lower in the USA compared to EU.

Conclusions

Ceftaroline exhibited broad-spectrum activity and high potency against streptococci recently (2008) collected from patients in the USA and European medical centers.

Ceftaroline exhibited broad-spectrum activity and high potency against streptococci recently (2008) collected from patients in the USA and European medical centers.

References

Ceftaroline exhibited broad-spectrum activity and high potency against streptococci recently (2008) collected from patients in the USA and European medical centers.

Ceftaroline exhibited broad-spectrum activity and high potency against streptococci recently (2008) collected from patients in the USA and European medical centers.

Ceftaroline exhibited broad-spectrum activity and high potency against streptococci recently (2008) collected from patients in the USA and European medical centers.