Abstract

Background: Ceftaroline (CRO) is a broad-spectrum cephalosporin with activity against S. aureus (MRSA), different methicillin-resistant SA (MRSA), multidrug-resistant (MDR) S. pneumoniae (SPN) and vancomycin-resistant Enterococcus faecalis (VRE). The present study assessed the activity of CRO in the US in vitro and in vivo against clinical isolates from various hospitals.

Methods: A total of 114,131 isolates were consecutively collected from 183 medical centers in 2011-2015 from patients requiring hospitalization. CRO was compared against Gram-positive and negative species isolated in US hospitals. Testing was performed in CLSI broth microdilution methods. Rates of susceptibility for CRO were compared against MRSA, S. aureus (SA), and S. pneumoniae (SPN) using the Clinical and Laboratory Standards Institute (CLSI) breakpoints. All MDR SPN and wild-type Enterococcus faecalis (CoNS) isolates were tested in the study.

Results: Isolates were mainly collected from skin/soft tissue/teeth (38,162; 33.5%), respiratory tract (23,053; 33.4%), and bloodstream (17,348; 15.2%) infections. MRSA rates varied from a high of 49.9% in 2013 to a low of 44.9% in 2015 (48.7% overall). CRO inhibited all SA strains at ≤2 µg/mL. CRO had 99.99% activity against MDR SPN (MIC = 0.12 µg/mL), and inhibited all MRSA (MIC = 0.06 µg/mL) and S. capitis (MIC = 0.06 µg/mL) and S. warneri (MIC = 0.12 µg/mL) at ≤0.015 µg/mL. These results are similar to those of previous studies.

Conclusions

- Ceftaroline demonstrated potent and consistent (2011-2015) activity against Gram-positive pathogens, including MRSA, different staphylococcal groups, and pneumococci.
- Ceftaroline also had an activity against Enterobacteriaceae (MIC ≤0.015 µg/mL) that is similar to that of currently approved antimicrobials.
- These results are similar to those of previous publications and support the use of ceftaroline (CRO) against key bacterial species remaining stable to the strains tested.
- The present results, here coupled with documented efficacy of ceftaroline in the treatment of selected infections, offer a novel and attractive option in the initial management of CAP and ABSSSI patients requiring hospitalization.

References