Ceftaroline demonstrated excellent activity against both methicillin-susceptible S. aureus (MSSA) and methicillin-resistant Staphylococcus aureus (MRSA) (Table 1). All MSSA strains were inhibited at ≤0.25 μg/mL (97.5%). All other pathogens responsible for community-acquired respiratory tract infections (CARTI) were inhibited by ceftaroline at ≤0.25 μg/mL (≥99%). The exception was Cefuroxime, with MIC observed among MSSA was ≤0.5 μg/mL (Table).

Ceftaroline (MIC: ≤2 μg/mL) was 16-fold more active than ceftriaxone (MIC: ≤2 μg/mL) against S. pneumoniae (Table 2). Ceftaroline-related good activity against S. pneumoniae (MIC ≤0.008 μg/mL) against which ceftriaxone was intrinsically more active (MIC ≤0.5 μg/mL) was ≤0.12 μg/mL (≥95%).

S. pneumoniae isolates that were susceptible to both penicillin (Fig. 2) and erythromycin (multiresistant) had slightly higher (2-fold) ceftriaxone MIC values with a MIC of 0.25 μg/mL. Strains within this resistant subset of pneumococci were less susceptible to almost all comparators, including the cephalosporin agents.

All β-lactam-resistant isolates, including those that were β-lactamase-positive, were highly susceptible to ceftaroline, with all β-lactam-resistant strains inhibited at ≤0.5 μg/mL. (Table 1). Ceftaroline was the most potent antibiotic at all tested against S. pneumoniae and its influence.

Ceftaroline MIC (≤0.25 μg/mL) was ≤0.50 μg/mL for most of the clinical isolates, with the exception of S. pneumoniae. As seen in Table 2, ceftaroline activity was evaluated against 3 common pathogens associated with community-acquired respiratory tract infections (CARTI) (Pfaller et al, 2001).

Ceftaroline is administered as a parenteral cephalosporin with enhanced gram-positive activity that includes oxacillin (methicillin)-resistant S. aureus (MRSA), β-lactamase-positive (86) S. pneumoniae, all strains having MIC values of ≤2 μg/mL. Strains within MIC ≤0.12 μg/mL was 8-fold more potent than cefdinir and cefuroxime, respectively, while amoxicillin/clavulanate (MIC ≤0.5 μg/mL) was 16-fold more potent than cefuroxime and had 64-fold greater activity than cephalosporin agents.

Materials and Methods

Bacterial isolates tested in this study were obtained from patients in 27 medical centers located in the US and 26 in Europe during 2008. S. pneumoniae (70 strains) and S. aureus (313 strains) were collected from non-respiratory (304) and respiratory (106) sources located in the US (200) and Europe (200). All strains were obtained as respiratory isolates from the clinical isolates and were non-susceptible to both penicillin and erythromycin. S. pneumoniae (MIC ≤0.5 μg/mL) was obtained from patients hospitalized with pneumococcal pneumonia within 72 hours post-admission. MIC ≤0.5 μg/mL was likely to be of community origin.

Both broth microdilution methods were used to determine the antimicrobial susceptibility of each organism using viable plates manufactured by TBRIS Diagnostics (Cleveland, OH). The Clinical and Laboratory Standards Institute (CLSI) guidelines for testing were used for testing antimicrobial susceptibility. Determination of minimum inhibitory concentration (MIC) range was done by broth dilution (CLSI, 2006). Plates were incubated at 35°C for S. aureus, 30°C for S. pneumoniae. β-lactamase positive and -negative (BPL) S. pneumoniae were tested using β-lactamase assay.

Ceftaroline activity was evaluated against 3 common pathogens associated with CARTI (Pfaller et al, 2001). Ceftaroline activity was evaluated against 3 common pathogens associated with CARTI (Pfaller et al, 2001). Ceftaroline activity was evaluated against 3 common pathogens associated with CARTI (Pfaller et al, 2001). Ceftaroline activity was evaluated against 3 common pathogens associated with CARTI (Pfaller et al, 2001). Ceftaroline activity was evaluated against 3 common pathogens associated with CARTI (Pfaller et al, 2001). Ceftaroline activity was evaluated against 3 common pathogens associated with CARTI (Pfaller et al, 2001). Ceftaroline activity was evaluated against 3 common pathogens associated with CARTI (Pfaller et al, 2001). Ceftaroline activity was evaluated against 3 common pathogens associated with CARTI (Pfaller et al, 2001). Ceftaroline activity was evaluated against 3 common pathogens associated with CARTI (Pfaller et al, 2001). 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