Introduction and objective

Ceftaroline fosamil is a new generation cephalosporin licensed by European Medicament Agency (2012) to be used in community-acquired pneumonia and skin/soft-tissue infections. The aim of this study is to determine ceftaroline minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) in S. pyogenes clinical isolates collected in Spain.

Material and methods

A total of 95 S. pyogenes clinical isolates were collected from skin and soft-tissue infections. Only one sample per patient was included. Suspected isolates were screened using bacitracin test and subsequently confirmed by the semi-automated method Microscan (Siemens). MIC and MBC values were determined by CLSI broth microdilution method using Mueller-Hinton broth supplemented with 5% lysed horse blood. Ceftaroline powder was provided by AstraZeneca laboratories. Enterococcus faecalis ATCC 29212 was included as quality control strain. Inocula quality control was also performed. Ceftaroline susceptibility breakpoint was provided by CLSI, designating as susceptible isolates those with MICs lower than 0.5 µg/ml.

Results

All isolates were susceptible to ceftaroline, displaying a MIC range from 0.002 to 0.06 µg/ml. MIC50 and MIC90 values were 0.004 and 0.008 µg/ml, respectively. MIC and MBC values were equal in 76 out of 95 isolates (80%). The remaining 19 isolates (20%) showed a MBC value just one twofold dilution higher than the MIC value. ATCC 29212 MIC value (0.5 µg/ml) was within the accepted ceftaroline MIC range (0.25-2 µg/ml).

Conclusions

Ceftaroline showed an excellent in-vitro activity against S. pyogenes clinical isolates. The MIC90 was 6 twofold dilutions lower than the CLSI susceptibility breakpoint. The MBC/MIC values showed the bactericidal activity of ceftaroline. As a result of these in-vitro data, ceftaroline could be an option to treat S. pyogenes infections.