Introduction

β-lactamase production is the most significant mechanism of β-lactam resistance and has many worrisome clinical consequences. The enzymes that can expand their spectrum of hydrolysis against various β-lactams. KPC enzymes have become the most troublesome group of β-lactamase producers since their discovery in 2000. New strains with ciprofloxacin MIC values ≥ 2 µg/mL are resistant (R) to all β-lactams, and often to other antimalarials, as the blac gene is associated with plasmid-based resistance mechanisms.

Ceftazidime, the active form of the prodrug ceftaroline, is a novel broad-spectrum cephalosporin exhibiting Gram-negative and negative activity and extended activity against penicillin-resistant. Shahkpoura pouchka pneumoniae. Enterobacteriaceae expressing KPC carbapenemases. When combined with fixed 4 µg/mL of NXL104 (CXL), and comparator agents using CLSI break point methods. KPC encoding genes were identified by PCR and sequencing.

Methods

Bacterial isolates

A total of 73 KPC-producing Enterobacteriaceae strains (7 species) identified during the 1999-2008 period in 2 surveillance studies (SENTRY Antimicrobial Surveillance Program and MYSTIC Program) were evaluated. Strains were collected in the USA (n = 65), Israel (n = 7), and Argentina (n = 1). Only 1 isolate per patient from documented infections was evaluated. Strains were collected in the USA (n = 65), Israel (n = 7), and Argentina (n = 1). Only 1 isolate per patient from documented infections was included in the study. Isolates were collected from bloodstream, respiratory tract, and skin structure infections according to defined protocols. Species identification was confirmed by standard biochemical

Results

• KPC-type enzymes were most frequently found in Klebsiella pneumoniae (34 strains; 46.6% of extended-spectrum β-lactamase (ESBL)-producing Enterobacteriaceae) strain (73 strains; 97.3%). Ceftriaxone (0.0 g/mL) still had the highest activity, but only inhibited 19.2 and 20.5% of streptococci with narrow or extended spectrum of activity. In this study, we evaluated the activity of ceftaroline combined with meropenem against KPC-2 and KPC-3-producing clinical isolates.

• Ceftaroline/NXL104 showed excellent activity against KPC-producing strains (MIC, 0.5 µg/mL), and 93.2% of KPC-producing strains were inhibited by 4 µg/mL.

Conclusions

Ceftaroline/NXL104 was highly active against clinical isolates of the emerging KPC-producing Enterobacteriaceae. NXL104 restored ceftaroline activity against the vast majority (93.2% inhibited at ≥ 2 µg/mL) of KPC-producing Enterobacteriaceae from all evaluated species. Results from the present study indicate that ceftaroline/NXL104 could be a valuable empiric agent for resistant Enterobacteriaceae strains in countries where serine carbapenemases and other β-lactamases are prevalent.

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References


