In vitro activity of eravacycline and comparators against Enterobacteriaceae, including subgroups of strains with resistance to carbapenems or 3rd/4th generation cephalosporins, isolated from patients in Europe

Introduction

Eravacycline is a novel, fully synthetic fluorocycline antibiotic of the tetracycline class with activity against both Gram-negative and Gram-positive bacteria, with the potential to treat infections caused by drug-resistant strains. The objective of this study was to determine the in vitro activity of eravacycline and comparators against a collection of multiresistant, carbapenem-resistant Enterobacteriaceae isolated from patients in Europe resistant to carbapenems or 3rd/4th generation cephalosporins.

Methods

In this study, a total of 170 clinical isolates were collected from 2013-2014, including MDR isolates, which were selected based on a target number of specific organisms with preferences given to K. oxytoca and 3rd/4th GC-R. The MICs were determined by broth microdilution according to CLSI guidelines (1).

Results

The eravacycline MIC90 for all Enterobacteriaceae was 0.12 mg/L. The eravacycline MIC90 for K. oxytoca and 3rd/4th GC-R isolates was 0.015 (0.12-0.25) mg/L, respectively. The CR isolate MIC90 of 0.12 mg/L was largely driven by four multidrug-resistant Enterobacteriaceae isolates (1/100).

Table 1: Correlative MIC distribution for eravacycline for Enterobacteriaceae, including drug-resistant phenotypes (cont’d)

Figure 1. Isolates counts by source of infection (n=1729)

Table 2. Antimicrobial activity of eravacycline and comparator agents against Enterobacteriaceae, including drug-resistant phenotypes (cont’d)

Conclusions

In 170 Enterobacteriaceae, including 140 GC-R isolates and 19 isolates, including MDR isolates was 0.12 mg/L, respectively. Based on MIC90 values in certain pathogens, the potency of eravacycline was 2-4 fold greater than that of tigecycline, was up to 2-fold greater to that of colistin. Clinical isolates were from widely diverse geographic locations throughout Europe and were collected from a variety of healthcare settings, including hospitals, nursing homes, long-term care facilities, and outpatient settings.

References


Table 3. Antimicrobial activity of eravacycline and comparator agents against Enterobacteriaceae, including drug-resistant phenotypes (cont’d)

Presented at the 26th ECCMID, April 9 - 12, 2016, Amsterdam, Netherlands

P. aeruginosa

Organism (n)

MIC (mg/L)

Gentamicin

Colistin

Tigecycline

Levofloxacin

Aztreonam

Eravacycline

Cefepime

Imipenem

Ceftazidime

Tetracycline

K. pneumoniae

S. marcescens

P. mirabilis

E. cloacae

K. oxytoca

P. rettgeri

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