Activity of Plazomicin and Comparator Agents Tested against Contemporary Clinical Isolates Collected Worldwide

M CASTANHEIRA, JM STREIT, SJR ARENDS, RK FLAMM
JMI Laboratories, North Liberty, WA, USA:

Abstracted Amended

Background: Plazomicin, a novel aminoglycoside developed to overcome common aminoglycoside-resistance (R) mechanisms, has completed phase 3 studies in complicated urinary tract infection and serious infections due to carbapenem-resistant CRE (CRE) isolates. This study evaluated the activity of plazomicin against a large collection of global clinical isolates.

Methods: A total of 6,417 clinical isolates were collected during 2017 from 90 hospitals worldwide as part of the CANWARD study, 2011-2012. These were tested against 6 comparator agents (tobramycin, amikacin, tobramycin-resistant gentamicin, tobramycin-susceptible gentamicin, amikacin-resistant, and amikacin-susceptible). The MICs were determined by the CLSI guideline using broth microdilution. The organisms were categorized as CRE if they were multidrug-resistant isolates, including methicillin-resistant Staphylococcus aureus (MRSA), extended-spectrum β-lactamase (ESBL)-producing Enterobacteriaceae, and indole-positive Proteaeae. Categorical interpretations for all comparator agents were those in the CLSI guidelines.

Results: Plazomicin displayed similar activity against most common Enterobacteriaceae (MIC ≤0.5 µg/mL) isolates at ≤1 µg/mL (Table 1), including methicillin-resistant Staphylococcus aureus (MRSA) isolates.

Conclusions: Plazomicin displayed limited activity against CRE isolates. These results corroborate previous reports from the literature that describe differences in MIC distributions of CRE isolates in different geographic regions analyzed with greater activity against isolates from North America and Europe when compared to Asia-Pacific and Latin America (Figure 4).

Introduction

Aminoglycosides are topical aminoglycosides that have been used for several decades to treat serious infections caused by various Gram-negative bacteria, Enterobacteriaceae, and strains group B streptococci. Aminoglycosides are also used in combination with other aminoglycosides to improve the activity against these organisms.

Materials and Methods

Antimicrobial susceptibility tests were performed according to CLSI guidelines using broth microdilution. These were tested against 6 comparator agents (tobramycin, amikacin, tobramycin-resistant gentamicin, tobramycin-susceptible gentamicin, amikacin-resistant, and amikacin-susceptible). The MICs were determined by the CLSI guidelines using broth microdilution.

Conclusions

- Against isolates resistant to other aminoglycosides per CLSI breakpoints, plazomicin inhibited 94.8% (726/766) of the gentamicin-resistant, 94.9% (672/708) of the tobramycin-resistant, 80.5% (292/362) of the amikacin-resistant, and 41.1% (23/56) of the amikacin-resistant CRE isolates tested.

References

Expert Opin Investig Drugs 2017; 26: 2554-2563.