Oritavancin Activity against Vancomycin-susceptible and Genetically Characterized Vancomycin-resistant Enterococcal Strains from Bacteremic Patients (2009–2010)

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Introduction

Enterococcal isolates currently represent the third most frequent pathogens responsible for health-care-associated infections in the USA. Enterococcal bacteremia strains, which are often resistant to commonly prescribed antimicrobial agents such as ampicillin, erythromycin, clindamycin, and cotrimoxazole, are of great concern. In addition, growing evidences have demonstrated that enterococcal species possess traits that enable them to cause a broad range of infections.

Methods

Bacterial strain collection. A total of 2,300 enterococcal (1,312 E. faecalis; 889 E. faecium; 24.5 E. gallinarum; 15 E. casseliflavus) clinical isolates were collected from 29 sites in the USA and 27 sites in 13 European countries, including Turkey and Israel. Identification was performed by using an automated system (Vitek®2; bioMérieux, Wayne, PA, USA), which provide results equivalent to the CLSI- or EUCAST-recommended algorithms, as required.

Antimicrobial susceptibility test methods. Isolates were tested for susceptibility to 24 antimicrobial agents and 2 antibiotic combinations by a CLSI broth microdilution method at JMI Laboratories, North Liberty, IA, USA. Testing of CLSI-recommended (M100-S21, 2011) strains: testing of CLSI-recommended (M100-S21, 2011) strains:

Table 1. Antimicrobial activity of oritavancin tested against vancomycin-susceptible and genetically characterized vancomycin-resistant enterococcal clinical isolates causing bloodstream infections in USA and European hospitals.

| Organism (no. tested) | Antimicrobial agent 50% 90% CLSI EUCAST Antimicrobial agent 50% 90% CLSI EUCAST |
|-----------------------|----------------------------------------|----------------------------------------|
| E. faecalis (1,312) | Vancomycin 0.25 – 1 0.015 0.015 | Vancomycin 8 – >16 >16 >16 |
| E. faecium (889) | Vancomycin >16 >16 >16 0.0 / 100.0 0.0 / 100.0 | Vancomycin 8 – >16 >16 >16 0.0 / 75.0 0.0 / 100.0 |
| E. gallinarum (24.5) | Vancomycin >16 >16 >16 0.0 / 100.0 0.0 / 100.0 | Vancomycin 8 – >16 >16 >16 0.0 / 75.0 0.0 / 100.0 |
| E. casseliflavus (15) | Vancomycin >16 >16 >16 0.0 / 100.0 0.0 / 100.0 | Vancomycin 8 – >16 >16 >16 0.0 / 75.0 0.0 / 100.0 |

Conclusions

• The present study highlights the emergence of E. faecium (38.5% of all enterococci) as an important pathogen responsible for health-care-associated infections in the USA. Findings from this study demonstrated higher antimicrobial resistance and mortality rate associated with this species.

• Two E. faecium strains from USA hospitals demonstrated a VanA-type vancomycin-resistant phenotype; molecular characteristics have been reported in the East Asia region (see high vanA type and very high vanB type). This appears to be the first report of such strains in the USA.

• In this in vitro activity studies oritavancin and comparator agents demonstrated the greatest overall activity against vancomycin-susceptible enterococci. Among the comparator classes, oritavancin demonstrated the greatest activity against vancomycin-resistant enterococci tested.

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References


