Meropenem-vaborbactam (MER-VAB) Tested Against Contemporary Enterobacteriaceae Isolates from USA Hospitals

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Amended Abstract

Background: Carbapenem-resistant Enterobacteriaceae (CRE) have been detected in various US hospitals and most of these isolates produce β-lactamases including extended-spectrum β-lactamases (ESBLs), KPC, and metallo-β-lactamases (MBLs). Until recently, the only FDA-approved β-lactamase inhibitor was meropenem and its active metabolite, meropenem (MER). In 2015, the FDA approved a combination of meropenem and RPX7009 (vaborbactam) for treating multidrug resistant (MDR) Enterobacteriaceae, including KPC enzymes. We evaluated the activity of meropenem (MER) alone and meropenem-vaborbactam (MER-VAB) against various CRE isolates collected in USA hospitals.

Methods: Carbapenem resistance was determined by the standardized high-performance liquid chromatography (HPLC) method. CRE isolates were collected during 2015 in 30 USA hospitals. The number of CRE isolates collected was 1,979/1,981 (99.9%) of which 55 KPN and 8 other CRE isolates were tested. CRE isolates were identified by MALDI Biotyper (Billerica, Massachusetts, USA), following manufacturer instructions.

Results: CRE isolates were collected in 30 USA hospitals. The number of CRE isolates collected was 1,979/1,981 (99.9%) of which 55 KPN and 8 other CRE isolates were tested. CRE isolates were identified by MALDI Biotyper (Billerica, Massachusetts, USA), following manufacturer instructions.

Conclusions: 

- Meropenem-vaborbactam was as active as meropenem alone against wild-type isolates; however, this combination was >32 fold more active than meropenem alone to treat meropenem-resistant CRE isolates from USA hospitals.
- CRE isolates are a major concern in the USA and other regions worldwide. These isolates are resistant to β-lactams and other to antimicrobial classes, which limits the therapeutic options available to treat infections caused by these organisms. Meropenem-vaborbactam is currently in a final Phase 3 clinical trial for complicated urinary tract infections; a clinical trial study in patients with CRE infections is ongoing.

Disclosures:
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References: