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L0041 Activity of meropenem-vaborbactam and single-agent comparators against KPC-producing Enterobacterales isolates from European countries (2016-2018) stratified by infection type

Mariana Castanheira*[1], Timothy Doyle[1], Caitlin Smith[1], Ross Donatelli[1], Dee Shortridge[1]

[1] JMI Laboratories, North Liberty, United States

Background: KPC-producing Enterobacterales isolates have disseminated worldwide and are considered endemic in various countries and several hospitals. We evaluated the activity of meropenem-vaborbactam and single-agent comparators against 243 KPC-producing Enterobacterales isolates collected in European hospitals from 2016–2018.

Materials/methods: Among 17,248 Enterobacterales clinical isolates collected in 39 European hospitals located in 19 countries that were susceptibility tested using reference broth microdilution methods, 243 carbapenem-resistant isolates submitted to whole genome sequencing carried bla_{KPC}.

Results: KPC-producing isolates were mainly *Klebsiella pneumoniae* (n=229) and included 184 bla_{KPC-3} and 58 bla_{KPC-2} from 14 hospitals and 9 countries. Meropenem-vaborbactam inhibited 99.2–100.0% of the isolates stratified by infection type (Table). The 1 meropenem-vaborbactam-resistant isolate from Italy had an MIC value of 16 mg/L and contained disruptions in *ompK35* and *ompK36* in addition to bla_{KPC}. Meropenem alone inhibited 12.5% of the urinary tract infection (UTI) isolates but none of the isolates from other infection sources. Gentamicin, colistin, and tigecycline were the most active comparators across most infection types, inhibiting 60.3–88.2%, 62.5–80.0% and 87.5–100.0% of the isolates, respectively. Other selected comparators, including all other β-lactams (data not shown), had limited activity against the KPC-producing isolates.

Conclusions: Meropenem-vaborbactam was recently approved in Europe for the treatment of complicated UTIs, including acute pyelonephritis, complicated intra-abdominal infections (cIAI), hospital-acquired bacterial pneumonia, ventilator-associated pneumonia, and bacteremia in Europe. As demonstrated by these results, this combination has potent activity against Enterobacterales isolates producing KPC enzymes and, based on the clinical experience, does not present the safety concerns of some comparators active against KPC-producers.

KPC-producing organisms (no. tested)	% susceptible using EUCAST/US FDA (tigecycline) breakpoints					
	Meropenem-vaborbactam	Meropenem	Amikacin	Gentamicin	Levofloxacin	Colistin
All isolates (243)	99.6	0.8	41.2	65.8	5.8	77.7
Bloodstream infections (132)	99.2	0.0	36.4	63.6	5.3	79.4
IAIs (17)	100.0	0.0	52.9	88.2	23.5	70.6
Pneumonia in hospitalized patients (58)	100.0	0.0	48.3	60.3	3.4	79.3
UTIs (16)	100.0	12.5	43.8	81.2	6.2	62.5
Skin and skin structure infections (20)	100.0	0.0	40.0	65.0	0.0	80.0