POSTER ABSTRACTS

250. Ceftazidime-avibactam Activity Tested Against a Large Collection of Enterobacteriaceae Isolates Collected in United States (USA) Hospitals in the 2011-2013 Period, Including Organisms Producing KPC- and CTX-M-variants

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Background. Increasing rates of multidrug-resistant (MDR) Enterobacteriaceae (ENT) challenges infection control and antimicrobial stewardship practices. We evaluated the activity of ceftazidime-avibactam (CAZ-AVI), a cephalosporin combined with a serine-β-lactamase (BL) inhibitor displaying activity against ENT, including those producing contemporary BLs.

Methods. 20,709 ENT isolates collected from 2011 to 2013 in 79 hospitals located in all nine USA Census regions were susceptibility (S) tested by CLSI broth microdilution against CAZ-AVI and comparators. CTX-M- and KPC-encoding genes were identified by a microarray based assay and/or reference PCR/sequencing.

Results. Overall CAZ-AVI inhibited 99.9% of isolates at ≤4 μg/mL (CLSI CAZ-S breakpoint) and was only less potent than meropenem (MIC_{90}, 0.25 and ≤0.06 μg/mL, respectively). Among 25 isolates displaying CAZ-AVI MICs at >4 μg/mL, 15 were indole-positive Proteae with MICs of 8-16 μg/mL and 3 *K. pneumoniae* (KPN) producing metallo-BLs (CAZ-AVI MIC, >32 μg/mL). Against the most prevalent bacterial species, CAZ-AVI inhibited all *E. coli* isolates, 99.9% of KPN and >99.9% of *E. cloacae* (ECL) at ≤4 μg/mL. CAZ-AVI $MIC_{50/90}$ for these species were 0.06/0.12, 0.12/0.25, 0.12/0.5 μg/mL, respectively (Table) whereas CAZ MIC_{90} values were 2, 32 and >32 μg/mL, respectively. All but one *P. mirabilis* were inhibited by CAZ-AVI at ≤0.5 μg/mL. 214 KPC-producers, 497 CTX-M-15-like and 102 CTX-M-14-like strains were identified and CAZ-AVI $MIC_{50/90}$ values for these strains were 0.5/2, 0.12/0.5 and 0.12/0.25 μg/mL, respectively. KPC-producers were very resistant to all comparators with CAZ-AVI, tigecycline ($MIC_{50/90}$, 0.5/1 μg/mL) and colistin ($MIC_{50/90}$, 0.5/2 μg/mL) being the only agents with acceptable coverage.

Organisms/Group (no. tested)	CAZ-AVI MIC (μg/mL): 50%	90%
All (20,709)	0.12	0.25
E. coli (6,486)	0.06	0.12
K. pneumoniae (4,421)	0.12	0.25
E. cloacae (2,261)	0.12	0.5
P. mirabilis (1,626)	≤0.03	0.06
KPC-producers (214)	0.5	2
CTX-M-15-like-producers (497)	0.12	0.5
CTX-M-14-like-producers (102)	0.12	0.25

Conclusion. CAZ-AVI displayed high activity against contemporary ENT isolates, including those producing prevalent CTX-M-variants in the USA, and KPC-producers that are often MDR.

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