29th ECCMID Amsterdam, Netherlands 13 – 16 April 2019

The congress of ESCMID

P1155 *In vitro* activities of aztreonam-avibactam and ceftazidime-avibactam against less commonly encountered Gram-negative bacteria collected during the ATLAS global surveillance program 2012-2017

Meredith Hackel*[1], Greg Stone[2], Boudewijn Dejonge, Dan Sahm[1]

[1] IHMA, Inc., Schaumburg, United States, [2] Pfizer, Inc., Groton, United States

Background: While antimicrobial susceptibility profiles have been well described in more common members of the Enterobacteriaceae, notably *Escherichia coli* and *Klebsiella pneumoniae*, and in *Pseudomonas aeruginosa*, the emergence and dissemination of resistance is also of concern in less commonly isolated species.

Ceftazidime-avibactam (CAZ-AVI) is a newly introduced agent with good activity against Enterobacteriaceae producing class A, C and some class D β-lactamases, but is not active against isolates that carry class B metallo-β-lactamases. Aztreonam-avibactam (ATM-AVI) is a combination that is under development that shows good activity against Enterobacteriaceae producing all classes of β-lactamases.

As part of the ATLAS global surveillance program (2012-2017), this study evaluated the *in vitro* activity of ATM-AVI, CAZ-AVI and comparators against clinical isolates of less commonly encountered gram-negative species.

Materials/methods: A total of 109,070 non-duplicate, clinically isolated gram-negative organisms were collected in 2012-2017 in the ATLAS program. Susceptibility testing was performed by broth microdilution and interpreted using EUCAST breakpoints. Avibactam was tested at a fixed concentration of 4 mg/L with doubling dilutions of ceftazidime or aztreonam.

Results: The activity of select antimicrobials against less common species (<1% of all gram-negative species collected) is shown in the table. ATM-AVI and CAZ-AVI showed MIC_{90} values ranging from ≤0.015 to 0.5 mg/L and 0.06 to 1 mg/L, respectively, against members of the Enterobacteriaceae with the exception of *Serratia* spp. and *P. alcalifaciens*, for which CAZ-AVI MIC_{90} had values of >8 mg/L. CAZ-AVI was active against *Pseudomonas* spp. (MIC_{90} = 8 mg/L), but not against *S. maltophilia*, whereas the reverse was true for ATM-AVI. Neither combination was very active against *Acinetobacter* spp. Notably, *E. asburiae* and *E. kobei* exhibited an MIC_{90} for colistin in the resistant range. Tigecycline was the most active compound tested against *Acinetobacter* spp., whereas colistin was most active against *Pseudomonas* spp. and *S. maltophilia* (both MIC_{90} of 2 mg/L).

Organism	N	MIC_{90} (mg/L)				
		ATM-AVI	CAZ-AVI	CST*	MEM	TGC
Acinetobacter nosocomialis	183	64	32	2	> 8	1
Acinetobacter pittii	402	64	16	2	1	1
Citrobacter spp.	400	0.25	0.5	1	0.06	0.5
Enterobacter asburiae	587	0.5	0.5	> 4	0.25	1
Enterobacter kobei	194	0.5	0.5	> 4	0.12	1
Enterobacter ludwigii	53	0.25	0.5	1	0.12	1
Pluralibacter gergoviae	11	0.5	1	0.5	0.06	0.5
Proteus hauseri	211	≤0.015	0.06	> 4	0.12	2
Proteus penneri	86	≤0.015	0.06	> 4	0.12	4
Providencia alcalifaciens	28	0.5	> 8	0.25	4	0.03
Providencia rettgeri	475	0.03	0.25	> 4	0.25	4
Providencia stuartii	649	0.06	0.5	> 4	0.25	4
Pseudomonas spp.	50	64	8	2	8	8
Raoultella ornithinolytica	157	0.12	0.5	1	0.06	0.5
Stenotrophomonas maltophilia	66	8	128	2	> 8	4
Serratia spp.	37	0.5	> 8	0.12	2	0.12

* Colistin not tested in 2012-2013; ATM-AVI, aztreonam-avibactam; CAZ-AVI, ceftazidime-avibactam; CST, colistin; MEM, meropenem; TZP, piperacillin-tazobactam

Citrobacter spp. consist of (n): *C. braakii* (322); *C. farmeri* (43); *C. gillenii* (2); *C. murliniae* (8); *C. sedlakii* (22); *C. youngae* (3)

Pseudomonas spp. consist of (n): *P. alcaliphila* (1); *P. fluorescens* (1); *P. mendocina* (1); *P. monteilii* (5); *P. mosselii* (4); *P. nitroreducens* (4); *P. otitidis* (2); *P. putida* (28); *P. stewartii* (1); *P. stutzeri* (3)

Serratia spp. consist of (n): *S. odorifera* (1); *S. rubidaea* (2); *S. ureilytica* (10); *S. liquefaciens* (24)

Conclusions: CAZ-AVI and ATM-AVI showed good activity against isolates of less commonly encountered gram-negative species, comparable to the activity demonstrated against the more commonly encountered gram-negative pathogens, although some species-specific antimicrobial susceptibility patterns may have been identified.