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Abstract (publication only)

Activity of ceftazidime and ceftazidime-avibactam against less commonly isolated Gram-negative bacilli

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Objectives: Ceftazidime-avibactam (CAZ-AVI) is a combination of a broad-spectrum cephalosporin, ceftazidime (CAZ) and a novel non-beta-lactam beta-lactamase inhibitor, avibactam (AVI). CAZ-AVI is undergoing clinical development for the treatment of serious Gram-negative bacterial infections. This study was done to improve understanding of AVI's impact on the in vitro activity of CAZ against a broad array of Gram-negative bacterial strains, representing many of the less commonly encountered species. Methods: Clinical, non-duplicate, non-consecutive isolates from the Eurofins Repository were evaluated. Each bacterial isolate was sub-cultured for inoculum preparation and was subjected to broth microdilution testing and interpretation in accordance with CLSI guidelines. Avibactam was kept at a constant concentration of 4 mg/L and, although more agents were tested, this analysis focused on CAZ and CAZ-AVI. Results: The following table shows MIC Ranges (mg/L) and MIC50/90s (mg/L) of CAZ and CAZ-AVI against less commonly isolated species Gram-negative bacilli for which have few data yet available for CAZ-AVI. Conclusions: These data provide a baseline in vitro profile of CAZ and CAZ-AVI activities against less commonly encountered, but occasionally problematic, Gram-negative bacilli. Little is known about the underlying mechanisms of beta-lactam resistance extant in these organisms, so the expected impact of AVI is uncertain. However, for five organism groups (A. hydrophilia, B. cepacia, C. violaceum, and E. corrodens and P. multocida), AVI clearly enhanced CAZ activity.

		MIC Range (MIC50/90)[1]	
Organism	**N**	**CAZ**	**CAZ-AVI**
Achromobacter xylosoxidans	5	2 - 16	4 - 8
Aeromonas hydrophila	8	0.25 - 2	0.12 - 0.5
Burkholderia cepacia	15	4 - >128 (4/64)	2 - 16 (4/16)
Chromobacterium violaceum	5	1 - 32	0.5 - 2
Eikenella corrodens	9	<=0.06 - 16	<=0.06 - 0.25
Ochrobactrum anthropi	5	128 - >128	16 - >128
Pasteurella multocida	10	<=0.06 - 4 (4/4)	<=0.06 - 0.12 (<=0.06/0.12)
Pseudomonas non-aeruginosa	17	0.25 - 8 (1/4)	0.25 - 8 (1/4)
Sphingobacterium multivorum	4	4 -128	4 - 64
Sphingomonas paucimobilis	6	2 - 128	2 - 128
Stenotrophomonas maltophilia	10	1 - >128 (1/8)	1 - 128 (2/8)
Yersinia enterocolitica	5	<=0.06 - 0.25	<=0.06 - 0.12

[1]MIC50/90s are only available for organism groups with N >= 10.