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Abstract (poster session)

Ceftaroline activity against clinical isolates from United States hospitals: results from the 2011 Assessing Worldwide Antimicrobial Resistance Evaluation programme

H. Sader*, D. Biek, I. Critchley, R. Flamm, R. Jones (North Liberty, Oakland, US)

Objective: To evaluate the activity of ceftaroline (CPT) tested against prevalent Gram-positive and -negative species isolated in USA hospitals (2011). CPT, the active form of CPT fosamil, is a new, parenteral, broad-spectrum cephalosporin exhibiting in vitro bactericidal activity against Gram-positive organisms, including MRSA and multidrug-resistant (R) Streptococcus pneumoniae (SPN), as well as common Gram-negative pathogens. CPT is approved in the USA for treatment of acute bacterial skin and skin structure infection (ABSSSI) and community-acquired bacterial pneumonia (CABP). Methods: 5635 consecutive, nonduplicate isolates from bloodstream, ABSSSI, and respiratory tract infections were collected from 52 medical centres and tested for susceptibility (S) to CPT and comparator agents at a central laboratory using the reference CLSI broth microdilution method. CLSI and EUCAST breakpoint criteria were used to determine S/R rates for comparator agents. USA-FDA interpretive criteria were used for CPT. Results: CPT inhibited all S. aureus strains (49.3% MRSA) at <=2 mg/L and 98.8% of MRSA were S to CPT (Table). CPT was 8- to 16-fold more active than ceftriaxone (CRO; MIC50/90, 4/4 mg/L) against MSSA. CPT inhibited all tested SPN at <=0.5 mg/L and remained active against penicillin-R and CRO-non-S SPN (MIC90, 0.25 mg/L for both subsets; see Table). The highest CPT MIC value among beta-haemolytic streptococci was only 0.03 mg/L. CPT activity against coagulase-negative staphylococci (CoNS; 61.6% methicillin-R) was similar to that against S. aureus. CPT showed only moderate activity against E. faecalis (MIC50/90, 2/8 mg/L). Haemophilus influenzae (MIC90, 0.03 mg/L; 27.2% beta-lactamase [BL] producers), H. parainfluenzae (MIC90, 0.12 mg/L) and Moraxella catarrhalis (MIC90, 0.12 mg/L) were highly CPT-S. CPT activity against the most frequently isolated Enterobacteriaceae species (MIC50, 0.12-0.25 mg/L) was similar to that of CRO (MIC50, <=0.06-0.25 mg/L) and ceftazidime (MIC50, 0.12-0.25 mg/L). Extended-spectrum BL (ESBL) phenotype was observed in 9.9% of E. coli and 12.4% of Klebsiella spp., and all cephalosporins tested showed limited activity against ESBL-producing strains. Conclusions: CPT demonstrated enhanced activity against staphylococci, including MRSA, various streptococcal groups, and H. influenzae strains recently isolated from USA hospitals. CPT activity against Enterobacteriaceae was similar to that of currently marketed broad-spectrum cephalosporins.

	No. of isolates (cumulative %) inhibited at ceftaroline MIC (mg/L) of:						
Organism (no. tested)	**≤0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**
S. aureus (1496)	0(0.0)	4(0.3)	124(8.6)	629(50.6)	500(84.0)	230(99.4)	9(100.0)
MSSA (758)	0(0.0)	4(0.5)	121(16.5)	611(97.1)	22(100.0)	-	-
MRSA (738)	0(0.0)	0(0.0)	3(0.4)	18(2.9)	478(67.6)	230(98.8)	9(100.0)
S. pneumoniae (956)	669(70.0)	69(77.2)	131(90.9)	841(99.4)	6(100.0)		
Penicillin-R (222)	0(0.0)	12(5.4)	123(60.8)	81(216)	6(100.0)		
Ceftriaxone-non-S (124)	2(1.6)	0(1.6)	38(32.3)	118(95.1)	6(100.0)		
β-haemolytic strep. (360)	360(100.0)	-	-	-	-	-	-
CoNS (172)	1(0.6)	49(29.1)	26(44.2)	56(76.7)	36(96.7)	3(99.4)	1(100.0)
E. faecalis (132)	0(0.0)	0(0.0)	0(0.0)	2(1.5)	5(5.3)	26(25.0)	65(74.2)
Viridans group strep. (63)	57(90.5)	5(98.4)	1(100.0)	-	-	-	-
H. influenzae (389)	367(94.3)	16(98.5)	4(99.5)	1(99.7)	1(100.0)	-	-
β-lactamase-neg. (283)	281(99.3)	2(100.0)	-	-	-	-	-
β-lactamase-pos. (106)	86(81.1)	14(94.3)	4(98.1)	1(99.1)	1(100.0)	-	-
H. parainfluenzae (56)	50(89.3)	0(89.3)	3(94.6)	1(96.4)	0(96.4)	2(100.0)	-
M. catarrhalis (63)	23(36.5)	18(65.1)	16(90.5)	5(98.4)	1(100.0)	-	-