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Abstract (poster session)

Antimicrobial activity of ceftaroline and comparator agents against contemporary (2010) Streptococcus pneumoniae from Europe and South Africa

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Objectives: To determine the activity of ceftaroline against recent (2010) S. pneumoniae (SPN) isolated in Europe (EU) and South Africa (SAF). Ceftaroline, active metabolite of the prodrug ceftaroline fosamil, is a novel cephalosporin exhibiting broad-spectrum in vitro bactericidal activity against Gram-positive organisms including multidrug-resistant (MDR)-SPN, methicillin-resistant S. aureus and common Gram-negative enteric bacilli. Methods: Susceptibility testing for ceftaroline and commonly used antimicrobials was performed by CLSI broth microdilution methodology on a total of 1,257 isolates from the 2010 Assessing Worldwide Antimicrobial Resistance Evaluation Programme (AWARE). Susceptibility interpretations for the comparators assessed in this study were performed using CLSI and EUCAST guidelines. Isolates were collected from patients in 55 medical centres in 19 EU countries, including Turkey and Israel, and in SAF (22 isolates, 1 medical centre). MDR-SPN status was determined by resistance (R) to 2 or more classes of antimicrobials from penicillin (PEN; CLSI oral breakpoints), erythromycin (ERY), levofloxacin, tetracycline (TET) and trimethoprim-sulfamethoxazole (SXT). Results: Ceftaroline was very active against PEN-susceptible (S) and non-MDR isolates, and retained potent activity against PEN-intermediate (I), PEN-R, and MDR isolates (Table). The highest ceftaroline MIC found was in one isolate at 0.5 mg/L (a MDR strain from Romania with a ceftriaxone (CRO) MIC of 4 mg/L). The ceftaroline MIC50 was at least four-fold higher in SAF isolates (0.03 mg/L) than in EU isolates (<=0.008 mg/L) due to the higher prevalence of MDR-SPN in the SAF region (54.5% vs. 26.8% in SAF vs. EU), however the MIC90 values were identical (0.12 mg/L for both; note the low number of SAF isolates [22]). Using CLSI oral PEN breakpoints, 26.0 and 72.7% of isolates were non-S for EU and SAF, respectively. By EUCAST breakpoints, 15.6% of all isolates were non-S to CRO (5.0% by CLSI non-meningitis breakpoints). Other antimicrobial resistances (CLSI) were: ERY, 23.6%; TET, 23.1%, SXT, 19.3%. Conclusions: This study demonstrated the potent in vitro activity of ceftaroline against recent (2010) EU and SAF SPN isolates including MDR strains. These data suggest that ceftaroline fosamil may emerge as an important therapy for infections caused by SPN resistant to beta-lactams and other commonly used antimicrobials as well as MDR strains.

	No. (cum. %) of isolates inhibited at Ceftaroline MIC (mg/L)								
Subset (n)	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	MIC50	MIC90
All (1257)	836 (66.5)	104 (74.8)	56 (79.2)	67 (84.6)	160 (97.3)	33 (99.9)	1 (100.0)	≤0.008	0.12
PEN-S (920)	831 (90.3)	73 (98.3)	11 (99.5)	5 (100.0)				≤0.008	≤0.008
PEN-I (155)	5 (3.2)	31 (23.2)	45 (52.3)	50 (84.5)	24 (100.0)			0.03	0.12
PEN-R (182)				12 (6.6)	136 (81.3)	33 (99.5)	1 (100.0)	0.12	0.25
non-MDR (939)	794 (84.5)	66 (91.6)	33 (95.1)	25 (97.8)	20 (99.9)	1 (100.0)		≤0.008	0.015
MDR (318)	42 (13.2)	38 (25.2)	23 (32.4)	42 (45.6)	140 (89.6)	32 (99.7)	1 (100.0)	0.12	0.25