The Effectiveness and Safety with Ceftaroline Fosamil therapy for Lower Respiratory Tract Infections in a Retrospective Multi-Centre Study

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Introduction

- Ceftaroline fosamil (CPT), is an advanced generation cephalosporin with bactericidal activity against Gram-positive and Gram-negative bacteria, including methicillin-resistant *Staphylococcus aureus* (MRSA)
- There is limited data regarding the use of CPT outside of FDA approved indications of community-acquired bacterial pneumonia (CABP)
- Objective of this study was to describe the outcomes of patients treated with CPT and lower respiratory tract infections (LRTI) such as MRSA CABP and healthcare-associated/hospital acquired pneumonia (HAP)

Materials and Methods

- A multi-centre, retrospective observational cohort conducted at the Detroit Medical Center, Henry Ford Hospital, Alexian Brothers Medical Center, Shands at University of Florida, and Ohio State Medical Center
- The cohort included consecutive patients treated with CPT for ≥72h during hospitalization from January 2011 to December 2013. Those with LRTI were included in this subset analysis.
- Diagnosis of LRTI was identified based on medical record documentation by the primary physician at the initiation of CPT therapy
- Clinical data was collected from medical records using a standardized instrument
- Outcome assessments of clinically evaluable patients were recorded at the end of CPT therapy
  - Clinical Success: resolution of all signs/symptoms of infection with no further need of antibiotic treatment while on CPT
  - Patients were also assessed for adverse events, readmission, and mortality
  - Microbiological success: defined as eradication of infecting organism while on CPT
- Statistical Analysis was performed with descriptive statistics including data frequencies and distributions using SPSS, version 22.0 (IBM, SPSS Inc., Chicago, IL)

Disclosures: No Financial support was received for the conduct of this study.

Patient and Infection Characteristics

- 554 patients received CPT; 145 (40%) were for LRTI and were included for evaluation.
- Of these, 66 (46%) were for CABP, 79 (54%) for HAP.

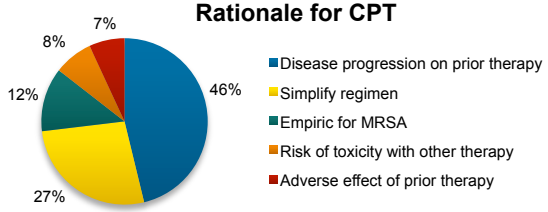
Patient Characteristic	CABP, n = 66	HAP, n = 79
Age (years)	56 (47-69)	64 (53-74)
APACHE II score	11 (7-15)	15 (10-18)
Weight (kg)	76 (68-91)	72 (65-91)
ICU admission	22 (33%)	50 (63%)
Diabetes	14 (21%)	30 (38%)
COPD	10 (15%)	21 (27%)
Renal Disease	22 (33%)	39 (49%)
Prior Hospitalization	28 (42%)	55 (70%)

Data presented as median (IQR) or n, percent within pneumonia type

Antimicrobial Therapy

- 87% (126/145) were given another antibiotic before CPT administration; 60% (87/145) were treated with vancomycin
- Median time to change to CPT for CAP was 3 days IQR (1-5) and HAP was 4 days IQR (2-7)
- 30% (44/145) another antibiotic was given with CPT; 13 received coverage for atypical organisms

Rationale for CPT



Microbiology

- 66% (96/145) had positive cultures; 23/96 were polymicrobial

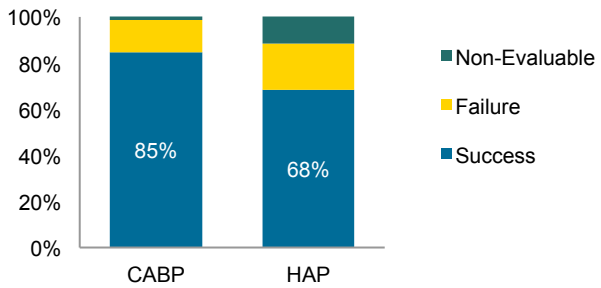
Organism	CABP, n = 37	HAP, n = 59
S. aureus	33 (89%)	54 (92%)
MRSA	30/37 (91%)	51/59 (94%)
Other Gram positive organisms	5 (14%)	3 (5%)
Gram negative organisms	4 (11%)	20 (34%)

Gram negative organisms included 10 *Klebsiella* spp, 6 *E. coli*, and 8 others.

Patient Outcomes

- Overall, 135/145 (93%) were clinically evaluable
  - Total clinical success was 81% (110/135)

Clinical Outcome and Type of Pneumonia



- Overall, 8.3% (12/145) experienced an adverse event while CPT
  - GI symptoms were commonly reported
- All cause hospital mortality rate was 14.5% (21/145)
- All cause 30 day mortality rate was 15.9% (23/145)
- 30-day Infection related readmission rate was 4.9% (6/122)

S. aureus pneumonia outcomes

Characteristics & Outcomes of *S. aureus* pneumonia	CABP, n = 33	HAP, n = 54
MRSA	30 (91%)	51 (94%)
Concomitant *S. aureus* bacteremia	8 (24%)	25 (76%)
Clinical success	30 (91%)	37 (69%)
LOS (days)	15 (9-26)	22 (15-33)
30-day all cause mortality	1 (3%)	11 (20%)

Data presented as median (IQR) or n, percent within pneumonia type

Conclusions

- Ceftaroline fosamil is safe and effective for pneumonia especially for CABP
- Further research is warranted to evaluated the use of CPT for healthcare associated pneumonia, including infections caused by *S. aureus*

References: Product Information. Telfaro (ceftaroline fosamil). St. Louis MO: Forest Laboratories Inc. Dec 2013. File TM Jr. et al. J Antimicrob Chemother. 2011. Low DE et al. Focus 2. J Antimicrob Chemother. 2011.