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Real-world experience of cefiderocol in treating hospital-acquired pneumonia due to Gram-negative pathogens in US hospitals 2020–Q2 2022

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INTRODUCTION

Cefiderocol is a siderophore cephalosporin with activity against aerobic Gram-negative bacteria that are resistant to multiple classes of antibiotics, and is approved for the treatment of hospital-acquired and ventilator-associated bacterial pneumonia.[1]

OBJECTIVE

In this study, we aimed to describe the initial experience of cefiderocol treatment of patients with hospital-acquired pneumonia (HAP) in real-world clinical settings.

METHODS

Study design: retrospective multicenter observational study using 2020–Q2 2022 data from the PINC AI Healthcare Database.[2]

Inclusion criteria

- Patients had Gram-negative bacterial respiratory tract infection, without COVID-19 (absent on admission) **AND** had first positive respiratory culture (index culture) for Gram-negative isolates >2 days after hospital admission
- Patients who received cefiderocol for >2 days.

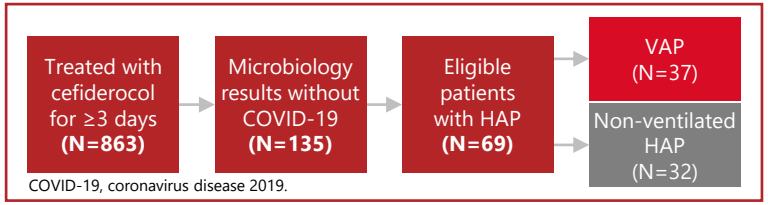
Exclusion criteria

- Patients with pneumonia, bronchopneumonia, or lobar pneumonia due to other or unspecified bacteria, or pneumonia with abscess of lung
- Patients without a confirmed Gram-negative pathogen
- Patients who received Gram-negative antibiotics within 2 days of admission.

Statistical analysis

- Descriptive statistics are presented: the number (%) for categorical variables and median (interquartile range [Q1–Q3]) for continuous variables
- Bivariate comparisons between non-ventilated (nv) HAP and ventilator-associated pneumonia (VAP) patients were conducted using a χ^2 test for categorical variables, and a Wilcoxon rank sum test for continuous variables.

PATIENT COHORT



COVID-19, coronavirus disease 2019.

RESULTS

Baseline characteristics N=69

62.0 YEARS OLD (49.0–69.0)

68.1% MALE

CHARLSON COMORBIDITY INDEX
3.0 (1.0–5.0)

COMORBIDITIES
42.0% renal disease
42.0% chronic pulmonary disease
36.2% congestive heart failure
43.4% diabetes

RACE
79.7% white, 11.6% black, 8.7% unknown

No differences between VAP and nvHAP patients

Table 1. Hospitalization characteristics and resistance pattern

Characteristics	Overall (N=69)	VAP (N=37)	nvHAP (N=32)	*P* value
Total length of stay (LOS), median (Q1–Q3)	36.0 (23.0–57.0)	**52.0 (28.0–64.0)**	**29.5 (19.0–41.5)**	**0.01**
Total infection-associated LOS, median (Q1–Q3)	26.0 (16.0–48.0)	31.0 (20.0–59.0)	21.0 (11.0–31.5)	0.028
Days from admission to index culture, median (Q1–Q3)	8.0 (6.0–13.0)	8.0 (6.0–20.0)	6.5 (4.5–9.5)	0.004
Total days on cefiderocol, median (Q1–Q3)	9.0 (6.0–14.0)	10.0 (7.0–15.0)	7.0 (5.0–11.0)	0.052
Had any ICU stay, n (%)	59 (85.5%)	**36 (97.3%)**	**23 (71.9%)**	**0.004**
Had infection-associated ICU stay, n (%)	50 (72.5%)	**35 (94.6%)**	**15 (46.9%)**	**<0.001**
Had any mechanical ventilation, n (%)	54 (78.3%)	**37 (100%)**	**17 (53.1%)**	**<0.001**
CR index isolate, n (%)	51 (73.9%)	25 (67.6%)	26 (81.3%)	0.242
Difficult-to-treat resistant index isolate, n (%)	31 (44.9%)	11 (29.7%)	20 (62.5%)	0.006

Figure 1. Distribution of pathogens

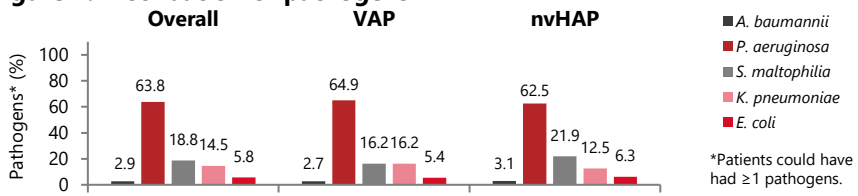


Table 2. All-cause mortality rate by infection type and pathogen

Characteristics	Died within 28 days of index culture	95% CI
Overall	10/69 (14.5%)	6.2–22.8
VAP	**5/37 (13.5%)**	**2.5–24.5**
nvHAP	**5/32 (15.6%)**	**3–28.2**
Site of index culture		
Respiratory only	2/15 (13.3%)	0–30.5
Respiratory + other sites	8/54 (14.8%)	5.3–24.3
Index pathogen		
Any *Pseudomonas aeruginosa*	3/44 (6.8%)	0–14.3
CR *P. aeruginosa*	2/38 (5.3%)	0–12.4
Any *Stenotrophomonas maltophilia*	2/13 (15.4%)	0–35.0
Any *Klebsiella pneumoniae*	1/10 (10%)	0–28.6
CR *K. pneumoniae*	0/1 (0%)	–
Any *Acinetobacter baumannii*	0/2 (0%)	–
CR *A. baumannii*	0/2 (0%)	–
Monomicrobial	**10/48 (20.8%)**	**9.3–32.3**
Polymicrobial	**0/21 (0%)**	–
Treatment		
Cefiderocol – monotherapy	0/3 (0%)	–
Cefiderocol – combination therapy	10/66 (15.2%)	6.5–23.8

CONCLUSIONS

CR pathogens were common and more frequent in nvHAP.

Overall 28-day all-cause in-hospital mortality was 14.5%.

Patients with VAP had longer hospital stay and more frequently infection-associated ICU stay than patients with nvHAP, although mortality rates were similar at day 28.

REFERENCES

1. Fetroja (cefiderocol). Prescribing information. Shionogi, Florham Park, NJ, USA. 2020.
2. PINC AI™ Healthcare Data White Paper: Data that informs and performs, September 14, 2021.