A Retrospective Assessment of the Effects of Cefiderocol in Patients with Multidrug-resistant Gram-negative Bacterial Infections

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IDWeek 2022

Background

•Infections due to carbapenem-resistant (CR) gram-negative bacilli are of great concern due to the limited effective antimicrobial options.

•Cefiderocol, a novel siderophore cephalosporin, has emerged as a new tool for combating multidrug-resistant bacterial infections.

•However, concerns about its efficacy have resulted in FDA approval only for cases with limited or no treatment options.

Objective

- To assess the outcomes (14-day and 28-day mortality) of patients with CR gram-negative bacterial infections treated with cefiderocol.

Methods

•Retrospective cohort study which includes all adult patients who received cefiderocol for at least three days from 1 October 2020 to 31 December 2021 at Stony Brook University Hospital.

•Patients who received multiple courses of cefiderocol during the same hospitalization or are still hospitalized were excluded.

•Statistics with Chi-square and t-test analyses were performed on SPSS.

Results

- 22 patients met the inclusion criteria.
- 7 (31.8%) were female.
- Average age and Charlson comorbidity index (CCI) were 63.6 year and 5.4, respectively.
- Average length of stay was 53 days.

	No. of patients	14- day all-cause mortality	28-day all-cause mortality
Patients receiving cefiderocol	22	1 (4.5%)	3 (13.6%)

Infections	No. of patients	14- day all-cause mortality	28-day all-cause mortality
Respiratory tract infection	6	1 (16.7%)	1 (16.7%)
Bacteremia	3	0 (0%)	0 (0%)
Complicated UTI	2	0 (0%)	0 (0%)
Other sites (Intraabdominal, orbital and buccal abscess, sacral, lower extremity and facial wound)	11	0 (0%)	2 (18.2%)

Bacterial isolates	No. of patients	14- day all-cause mortality	28-day all-cause mortality
Pseudomonas aeruginosa	14	0 (0%)	2 (14.3%)
Acinetobacter baumanii complex	8	1 (12.5%)	1 (12.5%)

Treatment	No. of patients	14- day all-cause mortality	28-day all-cause mortality
Double gram negative coverage (including cefiderocol)	10	0 (0%)	0 (0%)
Cefiderocol monotherapy	12	1 (8.3%)	3 (25%)
		P=1.0	P=0.25

- When analyzed based on age, gender, and comorbidities (CCI), no significant differences were found in patients who died at 28-day of cefiderocol therapy versus those survived.
- Cefiderocol was tolerated well in general. 4 of 21 (19%) patients developed AKI and 1 of 12 (8.3%) developed mild transaminitis.
- 4 out of 18 tested organisms (22.2%) were resistant, 1 (5.5%) was intermediate, and 13 (72.2%) were susceptible to cefiderocol.
- No carbapenemases were detected in any of the 11 tested clinical isolates of *Pseudomonas aeruginosa*.
- Treatment failure, defined as requiring change of antibiotic, was 9.1% (2 of 22).

Limitations

•The sample size is small and limited to a single tertiary academic medical center and data may not be applicable to other patient population cohort.

•Mortality rates were calculated as all-cause mortality rather than cause-specific mortality.

•Finally, the retrospective nature of our study and lack of direct comparison with best-available therapy in a randomized double blind trial fashion.

Conclusions

•The 14-day and 28-day all-cause mortality for all patients treated with cefiderocol are possibly less than previously thought.

•No significant differences were noted when cefidericol was used as monotherapy versus in combination.

References

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