RES-253

Efficacy and Safety of Colistimethate Sodium Combined with Ceftazidime-Avibactam versus Ceftazidime-Avibactam Monotherapy for Carbapenem-Resistant Bacterial Infections: A Multicenter Retrospective Study

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Objectives

To compare the efficacy and safety of colistimethate sodium (CMS) combined with ceftazidime-avibactam (CZA) versus CZA monotherapy in treating carbapenem-resistant Enterobacteriaceae (CRE) and carbapenem-resistant Pseudomonas aeruginosa (CRPA) infections.

Background

CRE and CRPA infections pose critical public health threat and therapeutic challenges due to limited antimicrobial options. CMS and CZA are commonly used for CRE and CRPA infections, but evidence evaluating CMS+CZA therapy remains scarce. This study is the first to evaluate the application of CMS+CZA in treating CRE and CRPA infections.

Methods

This multicenter retrospective study included patients with CRE/CRPA infections treated with CMS+CZA or CZA monotherapy between 2018-2025. Propensity score matching (PSM) was used to balance baseline characteristics. Primary endpoints of efficacy analysis were mortality and 30-day all-cause mortality. Secondary endpoints included clinical success, mechanical ventilation duration, length of stay in ICU and hospital. Safety outcomes comprised hypersensitivity, neurotoxicity, nephrotoxicity, and bronchospasm.

Results

A total of 492 patients (CMS+CZA: n=182; CZA: n=310) were enrolled. After PSM, the 30-day all-cause mortality was significantly lower in CMS+CZA group versus CZA group (29.55% vs. 39.77%, *P*=0.044). Adjusted odds ratio results show significantly lower mortality (*P*=0.021) and 30-day all-cause mortality (*P*=0.013) in CMS+CZA compared to CZA. Multivariate analysis identified CMS+CZA regimen as an independent factor for 30-day all-cause mortality (*P* <0.05). No significant differences in hypersensitivity, neurotoxicity, nephrotoxicity or bronchospasm were observed between groups.

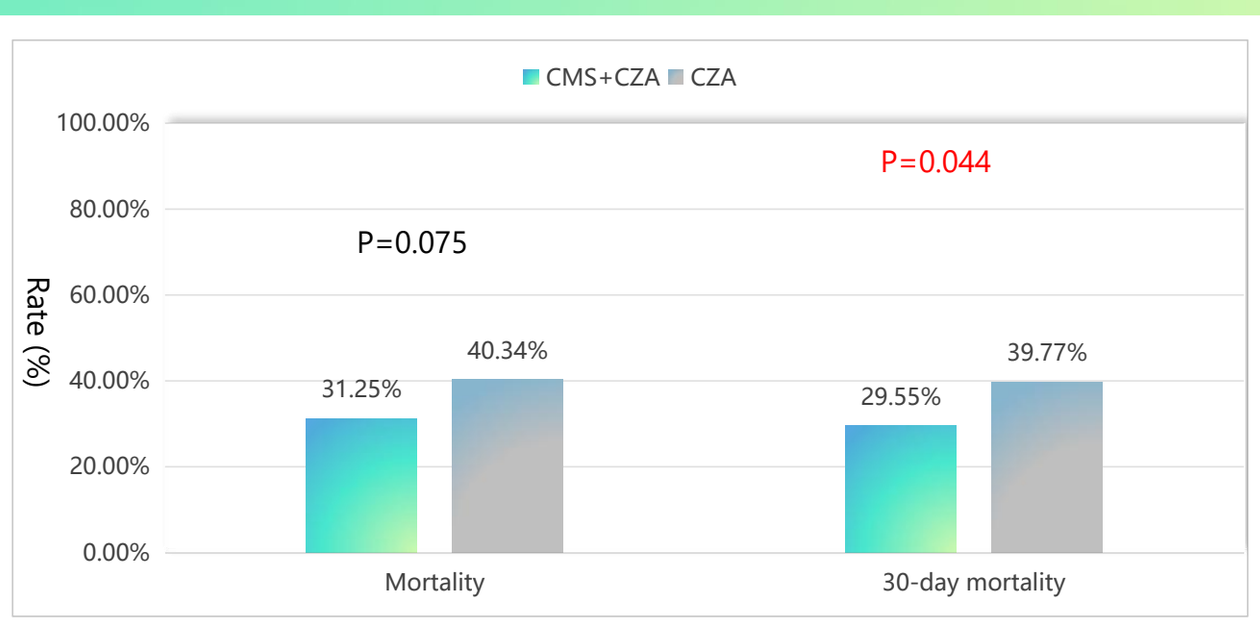

Fig 1. Comparison of clinical outcomes between two groups

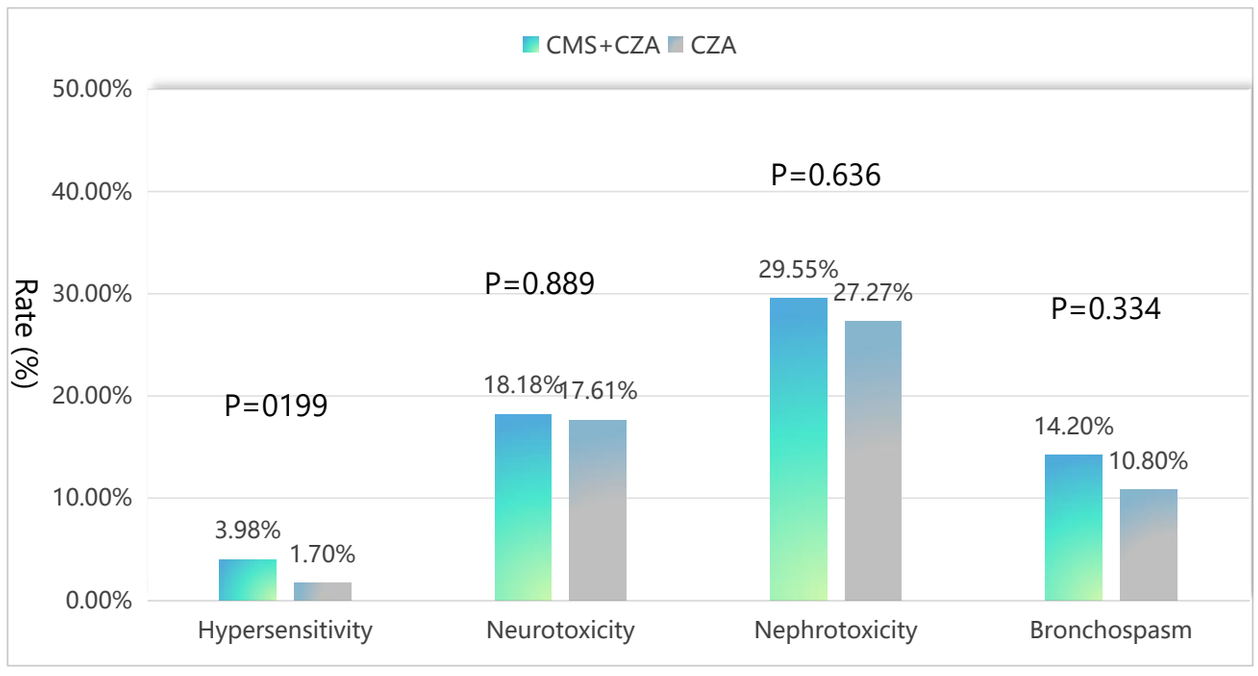

Fig 2. Comparison of adverse events between two groups

Variable	30d mortality=1 (N=122)	30d mortality=0 (N=230)	OR (95% CI)	P value
Medication regimen (CMS+CZA)	52(42.62%)	124(53.91%)		<0.05
MV (Yes)	71(58.20%)	97(42.17%)		<0.05

Table 1.Multivariate analysis of the main outcome of 30d mortality

Conclusions

CMS+CZA therapy remarkably reduced 30-day all-cause mortality compared to CZA monotherapy in CRE/CRPA infections without any additional safety issues, supporting its use as a therapeutic option.

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