

The Antimicrobial Susceptibility Of Cefiderocol, A Novel Siderophore Cephalosporin,  
Against Clinically Isolated Carbapenem-Resistant Gram-Negative Bacilli From  
A Tertiary Care Hospital of Punjab, Pakistan

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INTRODUCTION

With the increasing prevalence of carbapenem-resistant isolates, it is imperative to identify and evaluate alternative treatment options to improve patient outcomes. Cefiderocol, a novel siderophore cephalosporin, is highly effective against these organisms and studies advocate its preferred use in clinical practice. A lack of local published material necessitated the present study, which is aimed to determine the antimicrobial susceptibility of cefiderocol against carbapenem-resistant Gram-negative bacilli isolated from various clinically significant specimens of a tertiary care hospital of Punjab, Pakistan and to recommend this as an alternative treatment option in carbapenem-resistant organisms.

MATERIAL AND METHODS

This cross sectional study was carried out in Microbiology Laboratory of Department of Pathology Combined Military Hospital, Lahore over a duration of 6 months after taking approval from Institutional review board. The clinical samples from 145 patients of both genders aged between 18-70 years with carbapenem-resistant isolates were tested for susceptibility against cefiderocol (CLSI 2022). The results were then compared across various subgroups based on age, gender, type of clinical specimen and microbial isolate.

RESULTS

The mean age of the patients was 45.8±15.8 years. There were 114 (78.6%) male and 31 (21.4%) female patients with a male to female ratio of 3.7:1. The majority of the samples comprised of blood (n=40, 27.6%) followed by pus in 35 (24.1%) and non-directed bronchial lavage in 21 (14.5%) cases. Among the carbapenem resistant isolates, carbapenem resistant enterobacteriaceae were more common and comprised 119 (82.1%) isolates followed by pseudomonas aeruginosa in 26 (17.9%) cases.

RESULTS

Characteristics	Participants (n=145)
Age (years)	45.8±15.8
• <45 years	49 (33.8%)
• ≥45 years	96 (66.2%)
Gender	
• Male	114 (78.6%)
• Female	31 (21.4%)
Specimen	
• Blood	40 (27.6%)
• Pus	35 (24.1%)
• NBL	21 (14.5%)
• Tissue	15 (10.3%)
• Sputum	18 (12.4%)
• Fluid	12 (8.3%)
• Urine	4 (2.8%)
Carbapenem-Resistant Isolate	
• Enterobacteriaceae	119 (82.1%)
• Pseudomonas aeruginosa	26 (17.9%)

Table 1 Demographic Characteristics of Study Sample

Cefiderocol susceptibility was observed in 133 (91.7%) carbapenem resistant isolates. When compared, there was no statistically significant difference in cefiderocol susceptibility across various subgroups based on age (p-value=1.000), gender (p-value=0.720), type of clinical specimen (p-value=0.992) and carbapenem resistant isolate (p-value=0.694).

Cefiderocol Susceptibility	Frequency (n)	Percent (%)
Yes	133	91.7 %
No	12	8.3 %
Total	145	100.0 %

n=145  
Table 2 Cefiderocol Susceptibility of Carbapenem Resistant Isolates

CONCLUSION

Cefiderocol demonstrated a high susceptibility rate against carbapenem-resistant isolates, regardless of patient demographics and microbial organism, which underscores the potential of cefiderocol as an effective alternative treatment option for such cases in future clinical practice.

CONFLICT OF INTEREST

None