Doripenem may be the most optimal carbapenem to treat *Pseudomonas aeruginosa* infections

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1. Introduction

If antipseudomonal carbapenems, including imipenem, meropenem, and doripenem, were chosen to treat infections caused by *Pseudomonas aeruginosa*, previous studies revealed that imipenem readily selected imipenem-resistant *P. aeruginosa*, but doripenem did not readily select doripenem-resistant *P. aeruginosa*. This study was conducted to re-investigate this viewpoint.

2. Methods

At a regional hospital in southern Taiwan, from 2014 to 2015, all isolates of carbapenem-resistant *P. aeruginosa* (CRPA), defined as *P. aeruginosa* being resistant to one or more of antipseudomonal carbapenems, reported by clinical laboratory were enrolled in this study. Disk diffusion method was used for antimicrobial susceptibility testing. The interpretation criteria were according to the recommendation of Clinical and Laboratory Standards Institutes 2014. All intermediate-resistant results were regarded as resistant results in this study. The susceptibility rates of each individual antipseudomonal carbapenems against CRPA were analyzed.

3. Results

A total of 296 CRPA isolates, including 136 in 2014 and 160 in 2015, were enrolled in this study. The susceptibility rates of imipenem, meropenem, and doripenem against CRPA were 6%, 4%, and 15%, respectively in 2014. Those were 9%, 19%, and 28% of imipenem, meropenem, and doripenem, respectively in 2015.

4. Discussion

As a result of this study, doripenem had the highest susceptibility rates against CRPA, indicating that doripenem did not readily select CRPA. In contrast, imipenem had the lowest susceptibility rates, indicating that imipenem readily selected CRPA. These findings echoed previous studies. According to the results of this study, we suggest that doripenem should be regarded as the first choice if antipseudomonal carbapenems will be used to treat infections caused by *P. aeruginosa*. In addition, doripenem may be the optimal carbapenem for empiric treatment of hospital-acquired infections because *P. aeruginosa* should be considered as the likely pathogen in these infections.