Epidemiology and Risk Factors of Extensively Drug-Resistant (XDR) *Pseudomonas aeruginosa* Infection

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ABSTRACT

Background Extensively drug-resistant *Pseudomonas aeruginosa* (XDR-PA) has been increasing in healthcare-associated infections worldwide. This study aimed to determine the prevalence, the factors associated with the XDR-PA infections as well as the factors associated with the clinical outcomes and mortality in patients with XDR-PA infection.

Methods A retrospective study of adult hospitalized patients with *Pseudomonas aeruginosa* (PA) nosocomial infections was performed between April and December 2014.

Results A total of 292 patients with 308 episodes of PA nosocomial infections were included. Of these, 74 (24%) were XDR-PA strains, 33 (10.7%) were non-XDR MDR-PA strains, and 201 (65.2%) were caused by susceptible strains. Prior PA colonization (adjusted odds ratio [aOR] 3.72; 95% CI 1.33-10.39) and APACHE II scores (aOR 1.12; 95% CI 1.01-1.24) were independently associated with XDR-PA infections. All XDR-PA strains remained susceptible to colistin and approximately 30% were susceptible to aminoglycoside. The independent factors related to 7-days favorable clinical outcome were appropriate empirical antibiotic (aOR 3.00; 95% CI 1.31-6.89) and 7-days favorable microbiological outcome (aOR 7.73; 95% CI 2.85-20.99). Patients with XDR-PA had a significantly higher mortality rate than

those with non-XDRPA (47.1% vs. 27.7%, p=0.004). The factors independently associated with overall mortality were, being a medical patient (aOR 2.62; 95% CI 1.26-5.42), receipt of mechanical ventilator (aOR 3.10; 95% CI 1.49-6.47), and severe sepsis/septic shock (aOR 5.79; 95% CI 2.55-13.13).

Conclusions

Nosocomial infection caused by XDR-PA is not uncommon. Given the high mortality rate of patients with XDR-PA infection, timely appropriate empirical antibiotic with colistin should be considered as empirical therapy for serious infections where XDR-PA infection is suspected.