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Multi-Drug Resistant Pseudomonas aeruginosa: A 2019-2020 single center retrospective case control study

Introduction: Pseudomonas aeruginosa is an important cause of both community-acquired and hospital-acquired infections (HAIs). The objective of this study was to describe temporal trends in and explore independent risk factors for the isolation of multi-drug resistant (MDR) Pseudomonas aeruginosa.
Methods: Retrospective case-control study of patients with P. aeruginosa isolates between January 2019 and December 2020. MDR P. aeruginosa was defined as non-susceptibility to at least one agent in three or more anti-pseudomonal antimicrobial categories.
Results: 258 unique isolates were identified. Prolonged hospitalization (p<0.001), prior use of antibiotics (p<0.001), and respiratory sources (p<0.001) were strongly associated with the presence of multi-drug resistant P. aeruginosa. From 2019 to 2020, there was a decrease in the total number of P. aeruginosa isolates, but a significant increase in the proportion of MDR P. aeruginosa isolates (p=0.015). MDR P. aeruginosa was associated with increased mortality (p=0.047).
Conclusions: Over a period that coincided with the COVID-19 pandemic, resistant P. aeruginosa were more commonly isolated from hospitalized patients. Hospital-acquired respiratory P. aeruginosa isolates are strongly associated with multi-drug resistance. The COVID-19 pandemic may have contributed to the increase in the proportion of MDR P. aeruginosa isolates in 2020. These findings emphasize the need for antimicrobial stewardship in the post COVID-19 world. Changes to empiric therapy may be required with the increasing prevalence of antimicrobial resistance among hospitalized patients, and improved identification of patients at risk of MDR P. aeruginosa could facilitate appropriate empiric antibiotic decisions and improve hospital mortality.