

Aminoglycoside and Carbapenem Resistance Genes in *Pseudomonas aeruginosa*

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Abstract

Background: The purpose of this study was to assess the co-existence of four of the most commonly detected aminoglycoside modifying enzyme (AME) genes [aac (6')-I, aac (6')-II, ant (2'')-I and aph (3')-VI] in association with two types of metallo-β-lactamase (MBL) genes [IMP and VIM] among *Pseudomonas aeruginosa* (*P. aeruginosa*) isolates obtained from patients admitted in different wards of Zagazig University Hospitals, Egypt. Among 85 *P. aeruginosa* isolates examined in this study, MBL genes were detected in 92.9% of them and were more prevalent than AME genes that were detected in 69.4% of isolates. Both types of genes were detected together in 69.4% of isolates with a high significant association ($P < 0.001$). Six different genetic combinations of AME and MBL genes were detected. The most prevalent one (detected in 25.9% of isolates) was that of ant (2'')-I and VIM type of MBL genes. The emergence of antibiotic resistance in *P. aeruginosa* isolates is inevitable which emphasizes the implementation of proper infection control measures and calls for a more restricted use of carbapenems in hospital infections. Effective infection control programmes are needed to control the rapidly spreading MRSA at Egyptian hospitals.