

## Recognition of Metallo- $\beta$ -lactamase Producing *Pseudomonas aeruginosa* in Hospitalized Isolates in Erbil city, Iraq

Safaa Toma Aka

Hawler Medical University, Iraq

**Background and objective:** *Pseudomonas aeruginosa* is frequently responsible for the outbreaks of hospital-acquired infection. Multidrug resistance (MDR) in *P. aeruginosa* has appeared as an issue of great concern with the emergence of Metallo- $\beta$ -lactamase (MBL)-producing isolates, which showed to be the primary resistance mechanism in carbapenem-resistant *P. aeruginosa*. Strains producing these enzymes have increased in frequency over the past few years and have been responsible for prolonged nosocomial outbreaks. The aim of the present study was detection of MBL-producing *P. aeruginosa* isolates from patients and then evaluate antibiotic guide for clinicians in recommending accurate antibiotic and further controlling hospital infection.

**Methods:** A total of 98 consecutive isolates of *P. aeruginosa* causing infections were isolated from various clinical samples. We applied Vitek-2 automated system as a panel of antimicrobial agents. Imipenem-EDTA combined disk test (CDT) and modified Hodge test (MHT) for phenotypic detection of MBL-producing isolates were recommended; it was performed on all *P. aeruginosa* isolates showing resistance to imipenem.

**Results:** Out of 98 isolates of *P. aeruginosa* screened for imipenem (IMP) susceptibility, only 72 isolates (73%) showed IMP-resistance and the remaining 26 (26%) were sensitive to imipenem. Around 63 (87.5%) of the IMP-resistant isolates were able to produce MBLs as determined by CDT, while 30 (41.6) showed positive results in MHT. The resistance to antibiotics tested was significantly higher ( $P < 0.001$ ) with MBL producing *P. aeruginosa* isolates compared to non-MBL producers.

**Conclusions:** Our results support the belief that MBL producing-*P. aeruginosa* is being discovered in our region at an alarming rate. The prevalence of MDR to the antibiotics among MBL-producing *P. aeruginosa* isolates was established. CDT is a reliable screening test for detection of MBL. Colistins are recommended for the treatment of severe infections caused by these organisms.

**Keywords:** *P. aeruginosa*, MBL, Multi-drug resistance, phenotypic detection