

Molecular Detection of Metallo- β -Lactamase Genes in *Pseudomonas aeruginosa* Strains Isolated from Hospitalized Patients in Arak

Bahare Rahimi*; Mana Shoja Pour; Abdorrahim Sadeghi

Molecular research center, Arak, Iran

moch878787@yahoo.com

Background & Objectives: In 1966 Metallo- β -lactamase (MBL) was discovered in *Bacillus cereus* for first time (1). MBL genes are located on chromosome and plasmids. These plasmids are placed on transposons or integrons. Acquired MBLs exist Enterobacteriaceae, *Pseudomonas aeruginosa* and *Acinetobacter baumannii*. MBL genes can be transmitted horizontally, these genes cause carbapenem resistance in Enterobacteriaceae and other gram negative bacteria. Presence of VIM (Veronese Imipenemase), IMP (Imipenemase), SPM (Sao Paulo Metallo- β -lactamase), GIM (Germany Imipenemase) in *P. aeruginosa* cause resistance to imipenem, meropenem, anti-pseudomonal cephalosporins and anti-pseudomonal penicillins. The aim of this study was to determine the prevalence of MBL genes in *P. aeruginosa* strains isolated from hospitalized patients in Arak.

Methods: 40 imipenem-resistant *P. aeruginosa* strains were collected from samples of different hospitalized patients in Arak hospitals. Molecular studies was done by Duplex-PCR to detect two MBL genes including blaVIM-1 and blaIMP-1 in 40 imipenem-resistant *P. aeruginosa* strains.

Results: blaVIM-1 and blaIMP-1 were detected in imipenem-resistant *P. aeruginosa* strains respectively 50 percent and 6.6 percent.

Conclusion: According to this study frequency of blaVIM-1 in Arak is almost like what previous studies in other cities showed. But this seems to be first report of detection of blaIMP-1 in *P. aeruginosa* in Iran. Therefore it is necessary to control MBL-producing strains especially in hospitals.

Keywords: Gene; *Pseudomonas aeruginosa*; Metallo Beta Lactamase; Molecular Detection