Abstract

Pseudomonas aeruginosa is a Gram-negative bacterium that plays a major role in development of opportunistic and severe infections in hospitalized patients. Occurrence of enzymes capable of inactivating all beta-lactams including carbapenems is new problem in treatment of patients. The objective of this study was to investigate the prevalence of Metallo-Beta-Lactamases (MBL) enzymes bla_{IMP-1}, bla_{VIM-1} and bla_{SPM-1} in *P. aeruginosa* strains isolated from patients attending teaching hospitals in Zabol, Iran by PCR method.

One hundred *P. aeruginosa* isolate were identified by conventional biochemical tests. Antibiotic susceptibility test was performed by kirby-Bauer method. Double disc synergic test (DDST) method was used for phenotypic detection of MBL and bla_{IMP-1}, bla_{VIM-1} and bla_{SPM-1} genes were determined by PCR method using specific primers.

Out of 100 isolates, 11%, 7%, 15%, 98%, 4% and 7% were resistant to imipenem, ciprofloxacin, ceftazidime, cefixime, tobramycin and piperacillin respectively. MBL enzyme was detected in 5% of isolates. All of phenotypically MBL isolates had bla_{VIM-1} gene. 77% and 12% of isolates had bla_{VIM-1} and bla_{IMP-1} respectively and 10% of isolates had bla_{VIM-1} and bla_{IMP-1} simultaneously. None of the isolates had bla_{SPM-1}. The results of this study show that the prevalence of MBL enzymes in patients attending teaching hospitals in Zabol is very low and antibiotic resistance for cefixime was high and it is necessary to determine susceptibility test before treatment.

Keywords: Metallo-Beta-Lactamases (MBL) Enzymes, *Pseudomonas aeruginosa*, Antibiotic resistance