Evaluation of Carbapenem Resistance and Carbapnemase Enzyme Production in Pseudomonas aeruginosa isolates in Guilan

Shabnam Farsi*,

Abstract Introduction and purpose: Pseudomonas aeruginosa is a gram-negative bacterium and is one of the most important opportunistic pathogens in the development of hospital infections, which usually capture multiple drug resistance at the same time. The resistance of this gram-negative bacterium to various antibiotics, especially beta-lactam and carbapenem, has been reported increasingly. This study was conducted to determine the antibiotic resistance pattern and abundance of broad-spectrum beta-lactamases in clinical isolates of Pseudomonas aeruginosa, which abundance of metallo-β-lactamase genes of blaIMP and blaVIM in different strains of Pseudomonas aeruginosa was investigated in Rasht. Material and method: Totally, 107 samples of Pseudomonas aeruginosa were collected different laboratories in Rasht and identified by biochemical methods. The diffusion disk method was used to determine antibiotic resistance of strains. To identify the MBL producer strains, the diffusion disk method was used as a screening method and imipenem hybrid disk method was applied alone and in combination with EDTA as a confirmatory method to confirm previeus tests. Aplification of blaIMP and blaVIM genes was performed with PCR method. Research findings: A total of 29 strains were resistant to imipenem by diffusion disk method. All these strains were identified as the MBL producer by the hybrid method. 21 strains contained the blaVIM gene and 4 strains had the blaIMP gene. Discussion and conclusion: In this study, blaVIM was the dominant gene among strains resistant to imipenem. Due to importance of strains of MBL Producer in hospitals, rapid identification and tracing of these strains could be an important and basic step in the treatment and control of infections caused by these strains.
Keywords: Metallo-β-lactamase; Pseudomonas aeruginosa; Antibiotic resistance.

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