

Evaluation of Genetic Diversity in Carbapenem- Resistant *Acinetobacter baumannii* Isolates From Intensive Care Units of Shiraz Namazi Hospital by Modified Amplified Fragment Length Polymorphisms Analysis (AFLP)

Abbas Bahador¹; Nasser Harzandi²; Azadeh Alaei³; Reza Raoofian¹; Mohamad Taheri⁴; Zahra Hashemizadeh⁵; Amir Bakhtiari²; Najmeh Alaei*²

1-Department of Microbiology, School of Medicine, Tehran University of Medical Sciences, Tehran., Iran

2-Department of Microbiology, Faculty of Basic Sciences, Islamic Azad University, Karaj Branch, Karaj, Iran

3-Department of Microbiology, Faculty of Advanced Sciences, Technology, Islamic Azad University, Pharmaceutical Sciences Branch, Tehran., Iran

4-Department of Microbiology, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

5-Department of Microbiology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

bahador53@yahoo.com

Background & Objectives: *Acinetobacter* is a major concern because of its rapid development of resistance to a wide range of antimicrobial agents and its association with nosocomial infections with high mortality rates. Although carbapenems, such as imipenem, have become the drugs of choice for treatment, carbapenem-resistant *A. baumannii* outbreaks have recently been reported worldwide. For dearth of information of the organisms especially in Iran, with the aim of investigating population diversity of nosocomial *Acinetobacter baumannii* isolates and obtaining a comprehensive view of the emergence of carbapenem resistance *Acinetobacter* isolates collected from patients admitted in Shiraz Namazi hospital, Iran, we have analyzed, by the amplified fragment length polymorphism (AFLP).

Methods: The clinical isolates were collected from samples of intensive care units of Shiraz Namazi hospital from 2010-2011. After culturing; *A. baumannii* isolates were identified by API 20NE until species level, then were tested for antimicrobial susceptibility, by using micro-broth dilution methods according to Clinical and Laboratory Standards Institute (CLSI) methods. Culturing, extraction of DNA by DNA purification Kit (Bioneer) were performed then DNA was digested with MboI and MseI simultaneously with adapters ligated. Pre-amplification and sensitive amplification were done. Amplified fragments were analyzed using SYNGENE Gel Analysis software (version 3.08.3, Cambridge, UK) software.

Results: 50% of strains were resistance to imipenem and dendrogram patterns showed that four groups of strains (clone A-D) were distinguished; clone A 47% (2sub clone A1 1%, A246%), B 15%, C 5%, D 33%.

Conclusion: In present study, modified AFLP, as a tool in molecular epidemic was used for identification of *A. baumannii* at the strain level in Iran for first time. The AFLP has several advantages compared to various other typing methods, including discriminatory power, flexibility, reproducibility, and production of clear banding patterns suitable for computerized analysis.

Keywords: *Acinetobacter baumannii*; Carbapenem Resistant; AFLP