IJM Iranian Journal of Microbiology
Volume 4 Number 2 (June 2012) 82-86

Inducible clindamycin resistance in *Staphylococcus aureus* isolates recovered from Mashhad, Iran

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Received: January 2012, **Accepted:** April 2012.

ABSTRACT

Background and Objectives: *Staphylococcus aureus* is an important agent in hospital and community-associated infections, causing high morbidity and mortality. Introduction of the new antimicrobial classes for this pathogen has been usually followed by the emergence of resistant strains through multiple mechanisms. For instance, resistance to clindamycin (CLI) can be constitutive or inducible. Inducible clindamycin resistance which may lead to treatment failure can simply be identified by performing D-test. The aim of this study was to determine the prevalence of inducible clindamycin resistance among *Staphylococcus aureus* isolates by D-test method.

Materials and Methods: This was a cross-sectional study conducted on 211 non-duplicated *S. aureus* isolates in Imam Reza hospital of Mashhad during 2010. Susceptibility to oxacillin, cefoxitin, erythromycin and clindamycin was performed by agar disk diffusion method according to CLSI guidelines and D-shaped clindamycin susceptibility patterns where considered as D-test positive (D^+).

Results: Of 211 *S. aureus* isolates, 88 (41.7%) were methicillin resistant. It was found that of 88 MRSA isolates, 78 (88.6%) were erythromycin (ERY) resistant and 46 (52.3%) were CLI resistant. ERY and CLI resistance in MSSA strains was 22% and 11.4% respectively. Inducible clindamycin resistance was detected in 18 (20.5%) MRSA isolates, 46 (52.3%) of MRSA isolates and 9 (7.3%) of MSSA showed constitutive MLS_B phenotype.

Conclusion: In conclusion, we found a high prevalence of inducible clindamycin resistance phenotype in our region. We recommend that whenever clindamycin is intended to be used for *S. aureus* infections, D-test should be performed to facilitate the appropriate treatment of patients.

Keywords: *Staphylococcus aureus,* clindamycin, Inducible resistance

INTRODUCTION

Staphylococcus aureus (*S. aureus*) is one of the most common organisms causing nosocomial and community-acquired infections worldwide (1-3). About 30% of the general population is colonized with *S. aureus* and up to 3% carry methicillin-resistant *Staphylococcus aureus* (MRSA) in their nose (4). These bacteria can cause a wide range of infections from mild folliculitis to potentially fatal systemic illnesses such as bacteremia or endocarditis (5). The increasing prevalence of methicillin resistance among staphylococci is an increasing problem. In England and Wales, during 2006-10, 0.2% of all deaths and 0.4% of hospital deaths were attributed to MRSA (4). Nasal carrier individuals may develop many clinical infections. Despite limited consequences in extramural settings, it has been demonstrated that in certain groups of patients (e.g., those undergoing surgery or hemodialysis and HIV-positive patients),

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