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Title: Detection of Methicillin-Resistance Staphylococcus aureus Strains Isolated from Clinical Samples in Tehran by Detection of the mecA and nuc Genes

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Abstract: Background and objective: Methicillin-resistant Staphylococcus aureus (MRSA) is the main cause of hospital infection that has emerged over the last four decades. MRSA infections are associated with significant morbidity and mortality, especially in patients with bacteremia. Detection of MRSA is important for patient care and appropriate utilization of infection control resources. Methicillin-resistant in S.aureus is mediated by the mecA gene. Detection of the mecA gene and S.aureus species-specific marker, such as the thermostable nuclease (nuc) gene by polymerase chain reaction (PCR) from clinical isolates is considered as the gold standard assay for the identification of MRSA. The aim of this study was detection of the mecA and nuc gene by PCR assay for rapid and reliable detection of MRSA in clinical isolated from Patients in Tehran.

Materials and Methods: For identification of Staphylococcus aureus strain, isolates were identified based on conventional method as: colonial morphology, Gram stain characteristics, mannitol fermentation, catalase test, coagulase test and DNase test. DNA of S. aureus strains was extracted and The presence of nuc genes were detected by PCR. mecA genes were detected by PCR for detection of MRSA too. Data was analyzed by SPSS software.

Results: 104 out of 126 clinical sample identified as S.aureus by conventional method. Among them, 89 isolates (85.6%) were positive for nuc gene by PCR. 76 isolates (73.1%) were positive for mecA gene by PCR.

Conclusion: The PCR method for rapid identification of MRSA is a valuable tool in a routine microbiological laboratory ,thus benefiting patient therapy in hospitals.

Key word: Methicillin-resistant Staphylococcus aureus (MRSA), mecA, nuc