**Title:** Identification of MRSA Strains Using three Phenotypic as well as PCR Methods and determination of Isolated strains diversity by RAPD-PCR and Antibiotic Profiling in Tabriz Hospitals  

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Abstract: Background and objectives: Laboratory diagnosis and typing of MRSA strains are important in treatment, eradication and prevention of nosocomial infections related to these strains. The aims of present study were to determine the prevalence of MRSA strains in Tabriz hospitals using four methods, on the other hands were to determine of antibiotic profiling and molecular diversity of MRSA isolates by RAPD-PCR, finally to study the nasal carriage rate of S.aureus in hospital staff and in-patients.

Material and methods: During a six-month period in 2004-2005, inpatient and staff of Imam Khomeini and Pediatric hospitals of Tabriz and clinical specimens submitted to the hospital laboratories were screened for S. aureus and MRSA strains. Resistance to methicillin was detected using 30 µg cefxitin and 1 µg oxacillin discs, oxacillin agar screening plate and amplification of mecA gene by PCR method. Antibiotic profiling was performed by the disc diffusion method. RAPD-PCR has been applied for molecular typing of MRSA isolates by the use of five primers.

Results: A total of 160 S. aureus isolates (34.7%) were collected from noses of hospital staff and inpatients. Of which 48 isolates (30%) were diagnosed as MRSA. Forty-six S. aureus isolates were collected from clinical specimens of inpatients, of these, 32 isolates (69.5%) were MRSA (p<0.001). 3 cryptical MRSA strains were isolated by PCR method. In this study 80 isolated MRSA strains (by PCR~ 38.8%) fell into 41 antibiotic and 43 RAPD-PCR patterns, respectively that showing well correlation between two typing methods.

conclusion: This study showed that MRSA isolates with the same RAPD-PCR and antibiotic resistance patterns belonged to certain wards. Our study revealed that antibiotic resistance pattern when combined with RAPD-PCR pattern facilitates MRSA typing. The fact that MRSA isolates in our hospitals with identical patterns were isolated from staff and inpatients of certain wards, suggests that the principal rout of MRSA transmission was from patient to patient or from patient to staff and vice versa.

Methicillin resistant Staphylococcus aureus (MRSA), RAPD-PCR, Hospital-acquired infection, Antibiotic resistance pattern

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