

Phenotypic and Genotypic Study of Mupirocin Sensitivity Reduction in Staphylococcus Aureus Isolates in Guilan

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Staphylococcus aureus is one of the most important causes of hospital and acquired infections in the community and is resistant to a wide range of antibiotics. Glycopeptides, in particular vancomycin, are an effective antibiotic on the cell wall, the safest cure for methicillin resistant Staphylococcus aureus. The aim of this study was to evaluate the sensitivity of vancomycin to clinical isolates of Staphylococcus aureus and to evaluate the mutation of the vraSR wall synthesis regulator gene in vancomycin resistant strains. materials and methods: In this study, 71 strains of Staphylococcus aureus laboratories and hospitals in Rasht in 2015 and 2016 were collected. To determine the susceptibility of strains to antibiotic vancomycin, the phenotypic disc diffusion tests and the determination of the minimum inhibitory concentration were used by broth dilution method. To check the mutations of the two-component VraSR regulator gene in resistant isolates, PCR- Sequencing was done. CLC main workbench v3.5 software and Blast software (BLAST) were used to compare the sequence of these genes in resistant strains of Staphylococcus aureus strain gene. Findings: Number 3(4/22%) Strains resistant to vancomycin and 8(11/26%) The strains were semi-sensitive to vancomycin. MIC Vancomycin varied 4 to 64 µg/ml in these isolates. Investigation of nucleotide sequences of vraSR genes in 8 isolates, in all cases of mutation D59E The vraR gene was identified. Another common mutation in the gene was codon 121, which resulted in 2 replacements of serine instead of arginine and in one case led to the replacement of iso-oleosin instead of arginine. In the VraS gene, all 8 isolates were tested for mutation GAA>GGC in codon 45, which resulted in the replacement of glycine instead of glutamic acid. . Conclusion: The results of this study showed that Vincumycin MIC increased the sensitivity of this antibiotic to high percentage of Staphylococcus aureus isolates in Rasht. This is a

serious warning about the possibility of reducing its efficacy in the treatment of future MRSA infections. Also, due to the occurrence of mutations in all samples with moderate resistance to vancomycin, it seems that mutation in Vra genes is one of the most important mechanisms for reducing vancomycin sensitivity in Staphylococcus aureus strains isolated clinical specimens in Rasht.

Keywords : Staphylococcus aureus-Vancomycin -Vancomycin resistance vraSR-MRSA

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