The prevalence of emm types and Resistance to Erythromycin Patlern among group A Streptococci isolated from the throat in north of Iran

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Abstract

Background and objectives: Group A Streptococcus (GAS) strains have been identified by serologic methods based on surface protein antigens, T and M. Accordingly, different serotypes have been reported worldwide. Recently, the previous out of date procedures have been replaced by N-terminal emm gene sequence, which has been used in identifying more than 150 emm types. We aimed to determine the prevalence of emm types and phenotypes resistance to erythromycin among streptococci isolated from the throat in north of Iran.

Material and Methods: 50 GAS isolates from sore throat of patients referred to a few local hospitals in Tonekabon, Ramsar, and Chalus in northwest of Iran (2010-2011), by using blood agar, bacitracin sensitivity test, PYR test and agglutination by specific antiserum. Antibiotic resistance of the isolates was determined by the discs branded by Iranian Padtan Teb Company, using Kirby Bauer Test, and analyzed by CLSI standards. The mechanism of resistance to erythromycin was evaluated by Double Disk Diffusion Test in the presence of erythromycin and clindamycin. mme gene of all isolates were reproduced and their PCR products sequenced by the Korean Macrogen company. To determine the emm types**,** using BLAST2.0 program (National Center for Biotechnology Information, available in WWW.ncbi.nlm.nih.gov / BLAST), and the emm gene sequences were compared with sequences in the gene bank.

Results: we identified Four different types of emm, including e mm5 (26; 52 %), emm12 (12; 24%), emm79 (6; % 12) and emm86 (6; % 12). All beta lactam antibiotics have inhibitory effect on isolates, while18% of isolates (9 of 50) are resistant to erythromycin. The most common resistance phenotype is cMLSB (% 66.6) and the next one is phenotype M (% 33.3), but phenotype iMLSB is not observed in none of the isolates. Twelve percent (6cases) of isolates are resistant to clindamycin.

Conclusion: The results of present study show different types of GAS than those reported worldwide. The emergences of emm86 in pharyngitis and erythromycin resistance are the two valuable findings of this research.

Keywords: Streotococcus pyogenes,erythromycin,cMLSB,iMLSB