High macrolide resistance in streptococcus pyogenes strains isolated from children with pharyngitis in China

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Methods: Minimal inhibitory concentration with nine antibiotics was determined on 188 isolates of S. pyogenes collected from outpatients with pharyngitis in four children’s hospitals in different regions of China in 2007. Minimal inhibitory concentrations (MICs) of penicillin, chloramphenicol, cefradine, levofloxacin, macrolide (erythromycin, clarithromycin, azithromycin), clindamycin, and tetracycline were determined by the microdilution method. The macrolide resistant phenotypes of isolates were determined through a double-disk. The resistant genes (mefA, ermB, and ermA) were amplified by polymerase chain reaction (PCR).

Results: Over 95% were resistant to macrolides, while 92.0% were resistant to tetracycline. We also found that all isolates were sensitive to penicillin, chloramphenicol, cefradine, and levofloxacin. Among the 173 erythromycin resistant strains, 171 (98.8%) were assigned to the cMLS phenotype, while the remaining 2 (1.2%) were assigned to the MLS phenotype. Among the 171 cMLS isolates, 168 isolates (98.2%) had the ermA gene accounting for 98.2%. Meanwhile, 2 MLS isolates had the ermB gene. Macrolides were highly resistant to ermB positive strains (MIC(90) > 256μg/ml). Neither the M-phenotype nor the mefA gene was detected.

Conclusion: The ermB gene code is the main resistance mechanism against macrolides in S. pyogenes. The high rate of macrolide resistance to S. pyogenes was observed, which may be correlated with the overuse of antibiotics in China.

Mycobacterium tuberculosis L-form and RIF-dependent strains in clinical specimens

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