

Prevalence of macrolide resistance and in vitro activities of six antimicrobial agents against clinical isolates of streptococcus pneumoniae from a multi-center surveillance in Malaysia

ABSTRACT

The in vitro activities of 6 antimicrobial agents against clinical isolates of *Streptococcus pneumoniae* (pneumococci) were investigated and the erythromycin minimum inhibitory concentrations (MICs) were correlated with the two major macrolide resistance determinants, *mef*(A) and *erm*(B). MICs of commonly used antibiotics as well as the presence of macrolide resistance determinant genes in all isolates were tested. Seventy one pneumococcal isolates collected at Institute for Medical Research (IMR) were included in this study. Phenotypic characterization, MIC determination using E-test strips and polymerase chain reactions for antibiotic resistance determination were included. Among the isolates, 25 (35.2%) isolates were erythromycin susceptible, 3 (4.2%) were intermediate and 42 (60.6%) were resistant. Fifty three isolates (74.7%) were found with *mef*(A) alone, 15 (21.1%) isolates with *erm*(B) + *mef*(A) combination and 3 (4.2%) isolates with none of the two genes. The in vitro activity of penicillin, amoxicillin clavulanic acid, ceftriaxone and cefotaxime is superior to trimethoprim-sulfamethoxazole and erythromycin. In conclusion, pneumococcal isolates in this study were highly susceptible to penicillin with very low MICs. However, a very high prevalence rate of erythromycin resistance was observed. Erythromycin resistant *S. pneumoniae* isolates with both *mef*(A) and *erm*(B) showed very high MICs ≥ 256 $\mu\text{g/mL}$.

Keyword: *Streptococcus pneumoniae*; Macrolide resistance; Antimicrobial agents; Pneumococcal infection; Disease surveillance; Malaysia