**In Vitro Activity of Telithromycin Against Streptococcus pneumoniae Isolated from Patients in Siriraj Hospital**

Somporn Srifeungfung, Ph.D.*
Visanu Thamlikitkul, M.D.**

**ABSTRACT**

Seventy-one isolates of *Streptococcus pneumoniae* from different patients in different departments in Siriraj Hospital during 2002 and 2003 were tested for susceptibility to penicillin, clindamycin, tetracycline, erythromycin, vancomycin and telithromycin. Thirty-one isolates (43.7%) of *S. pneumoniae* were susceptible to penicillin, 5 (7%) were intermediately resistant to penicillin, and 35 (49.3%) were highly resistant to penicillin. The susceptibility of *S. pneumoniae* to clindamycin, tetracycline, erythromycin and vancomycin was 74.6 percent, 42.3 percent, 59.2 percent, and 100 percent, respectively. All isolates were susceptible to telithromycin. Telithromycin could be an alternative oral therapy for infections caused by drug-resistant *Streptococcus pneumoniae* in Thailand. (J Infect Dis Antimicrob Agent 2004;21:79-81.)

**INTRODUCTION**

*Streptococcus pneumoniae* is a common cause of community-acquired respiratory tract infections in Thailand. The prevalence of drug-resistant *Streptococcus pneumoniae* (DRSP) has been increasingly reported over the past two decades,1-7 thus a development of new antibiotics for treating these infections is urgently needed. Telithromycin is a ketolide, which is a 14-membered ring semi-synthetic macrolide. Telithromycin is active against DRSP including penicillin-resistant and macrolide-resistant *S. pneumoniae*.8-10 Efficacy and safety of oral telithromycin at 800 mg once daily for 5 to 10 days has been demonstrated in community-acquired pneumonia, acute exacerbations of chronic bronchitis, acute sinusitis and pharyngitis/tonsillitis.8,9 Telithromycin has been available in Europe for the aforementioned indications for several years and it has been available in USA since April 2004. The objective of this study was to determine the *in vitro* activity of telithromycin against *S. pneumoniae* isolated from Thai patients hospitalized to a tertiary care hospital in Bangkok.

*Department of Microbiology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.
**Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.

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Reprint request: Visanu Thamlikitkul, M.D., Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.

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MATERIALS AND METHODS

Streptococcus pneumoniae Isolates

Seventy-one isolates of S. pneumoniae were from sputum (40), blood (20) and others (11) from different patients in different departments in Siriraj Hospital during July 2002 and March 2003. Identification of S. pneumoniae was performed by using standard microbiological method (morphology and optochin susceptibility as shown by a zone of inhibition ≥ 14 mm in diameter). They were stored at -70°C in 5 percent trypicase soy broth plus 20 percent (V/V) glycerol until the time that the susceptibility test was conducted.

Susceptibility Test

The susceptibility to penicillin was performed by E-test using a 90-mm agar plate containing cation-adjusted Mueller Hinton agar with 5 percent sheep blood. The susceptibility of S. pneumoniae to erythromycin, clindamycin, telithromycin, vancomycin, and tetracycline was performed by disk diffusion according to the National Committee for Clinical Laboratory Standards (NCCLS) 2002 procedures. S. pneumoniae ATCC 49619 was used as quality control strain in every batch tested. All plates were incubated at 35°C in 5 percent CO2 for 20-24 hours. Interpretation of the test results for “sensitive” or “intermediate” or “resistant” to erythromycin, clindamycin, telithromycin, vancomycin, and tetracycline was made according to the criteria in Table 1.

RESULTS

Thirty-one strains (43.7%) of S. pneumoniae had a penicillin MIC of ≤ 0.06 (sensitive), 5 (7%) had a MIC of > 0.06 - 1 (intermediate), and 35 (49.3%) had a MIC of > 1 mg/L (resistant). The susceptibility of S. pneumoniae to clindamycin, tetracycline, erythromycin, vancomycin, and telithromycin was 74.6 percent, 42.3 percent, 59.2 percent, 100 percent, and 100 percent, respectively.

DISCUSSION

Our results indicate that the prevalence of penicillin- and macrolide-resistant S. pneumoniae in patients attending Siriraj Hospital during 2002 and 2003 was quite high. This observation is similar to those reported elsewhere. Patients suspected of having infections caused by DRSP may need an antibiotic that can overcome the resistance mechanism. Risk factors for acquiring DRSP have been identified. The major risk factor for acquisition of penicillin-resistant S. pneumoniae in Thai patients was a recent antibiotic use. Antibiotics active against DRSP are limited and few are available in an oral form. New generation of fluoroquinolones (levofloxacin, moxifloxacin, minocycline, and telithromycin) were effective against DRSP.

Table 1. Criteria for interpretation of zone diameters of studied antibiotics against S. pneumoniae.

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Disk Content (µg)</th>
<th>Zone Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telithromycin</td>
<td>15 µg</td>
<td>≤ 16</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>15 µg</td>
<td>≤ 15</td>
</tr>
<tr>
<td>Clindamycin</td>
<td>2 µg</td>
<td>≤ 15</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>30 µg</td>
<td>≤ 18</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>30 µg</td>
<td>-</td>
</tr>
</tbody>
</table>
gatifloxacin), linezolid and telithromycin are shown to be effective in therapy of DRSP infections. In our study, telithromycin is active against all 71 isolates of S. pneumoniae. Telithromycin should have a role for treatment of S. pneumoniae infections in Thai patients especially in outpatient care settings.

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References