The nationwide surveillance of bacterial respiratory pathogens conducted by the Japanese Society of Chemotherapy (JSC) 

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1) JSC Surveillance Committee & 2) The Kitasato Institute

Introduction

JSC conducted the first nationwide surveillance of bacterial respiratory pathogens in 2006.

Materials & Methods

2) Cooperative institutes: 34 Hospitals throughout Japan.
3) Strains tested: Isolates obtained from sputum, specimens by trans-tracheal aspiration (TTA) and/or bronchoscopy (confirmed by qualitative culture, by Gram-staining etc.) of well-defined adult respiratory tract infection (RTI) patients; community-acquired pneumonia (CAP), hospital-acquired pneumonia (HAP), acute exacerbations of chronic respiratory diseases (AECRD), and others.
4) Antibacterial agents tested: 42 Agents as listed in Table. 1.
5) Susceptibility test: Conducted at the central laboratory (The Kitasato Institute, Anti-infection Drug Research Center) according to CLSI standards for broth-microdilution methods.
6) Determination of β-lactamase: Nitrocefin method and Cica-Beta Test [Kanto Chemicals, Tokyo; for detection of extended-spectrum β-lactamase (ESBL) and metallo-β-lactamase (MBL)].

Results

Susceptibilities (Table.1) and current trends of resistant (Fig.1-3) in the three major bacterial respiratory pathogens.

Fig. 2 Proportions of PISP and PRSP under stratifications

Susceptibilities (Table.1) and current trends of resistant (Fig.1-3) in the three major bacterial respiratory pathogens.

Table 1. Susceptibility of 3 major respiratory pathogens to antibacterial agents (µg/mL).

<table>
<thead>
<tr>
<th>Antibacterial agent</th>
<th>Staphylococcus aureus</th>
<th>Streptococcus pneumoniae</th>
<th>Haemophilus influenzae</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIC</td>
<td>MIC50</td>
<td>MIC90</td>
</tr>
<tr>
<td>Penicillin G</td>
<td>0.125</td>
<td>0.25</td>
<td>1</td>
</tr>
<tr>
<td>Oxacillin</td>
<td>0.25</td>
<td>0.50</td>
<td>1</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>4</td>
<td>8</td>
<td>64</td>
</tr>
</tbody>
</table>

Conclusion and Discussion

* Unique profiles of resistant respiratory pathogens (MRSA, PISP and BLNAR) were seen in well-diagnosed adult RTI patients.
* MRSA and PISP were more frequent in inpatients than in HAP patients whereas BLNAR tended to be more frequent in outpatients and in AECRD patients. BLNAR also was characteristic to be more frequent in younger patients (≤ 59 years old).
* Oxacillin-resistant S.pneumoniae appeared less frequent (4 of 200 strains) irrespective of penicillin-resistance.
* Only 1 out of 143 P.aeruginosa strains was found to be multi-drug-resistant variant producing MBL. Only 2 out of 74 K.pneumoniae strains were found to be ESLB-producing variants.

JSC will conduct yearly surveillance in adult RTI and, in the near future, adult UTI and pediatric infections.