
MA Yue, CHEN Hongbo, LI Jingyun et al

National Institute for the Control of Pharmaceutical and Biological Products
National Center for Surveillance of Antimicrobial Resistance
Beijing 100050, China

Abstract
Objective To investigate the resistance trend of S. typhi, S. paratyphi and nontyphoidal salmonella organisms collected from 1998 to 2000 to antimicrobial agents commonly used in clinical setting. Methods Disk diffusion test, K-B method was used. Results were assessed according to the criteria of the National Committee of Clinical Laboratory Standard (NCCLS). Results 1. 237 clinical isolates of S. typhi and S. paratyphi as well as 122 strains of nontyphoidal salmonella species were collected. The resistance rates of S. typhi and S. paratyphi increased slightly. On the contrary, resistance of nontyphoidal salmonella species increased markedly from 1998 to 2000. The resistance rate of ampicillin increased from 26.6% in 1998 to 46.3% in 2000, TMP/SMZ from 20.0% to 59.3% and ciprofloxacin from 10.0% to 29.6%. 2. S. enteritidis and S. typhimurium were the major serotypes in nontyphoidal salmonella species. 3. Three multi-resistant isolates with ACTStCp resistant pattern were identified. Conclusions S. typhi and S. paratyphi were generally susceptible to most commonly used antimicrobial agents except SMZ/TMP. The resistance of nontyphoidal salmonella species is increasing. It is important to monitor the resistance of these microorganisms.

Key words S. typhi, Nontyphoidal salmonella, Disk diffusion test, Multi-resistant pattern
表1 1998—2000年伤寒、甲、乙、丙副伤寒沙门菌耐药情况

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>头孢拉定</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>7.9</td>
<td>7.9</td>
<td>14.8</td>
</tr>
<tr>
<td>头孢他啶</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>3.3</td>
<td>7.9</td>
<td>20.3</td>
</tr>
<tr>
<td>环丙沙星</td>
<td>5.3</td>
<td>4.7</td>
<td>7.4</td>
<td>26.6</td>
<td>31.6</td>
<td>46.3</td>
</tr>
<tr>
<td>四环素</td>
<td>0.0</td>
<td>0.0</td>
<td>11.7</td>
<td>-</td>
<td>31.5</td>
<td>31.5</td>
</tr>
<tr>
<td>头孢噻肟</td>
<td>15.8</td>
<td>24.7</td>
<td>21.3</td>
<td>20.0</td>
<td>52.6</td>
<td>59.3</td>
</tr>
<tr>
<td>头孢噻肟</td>
<td>0.0</td>
<td>3.6</td>
<td>10.6</td>
<td>-</td>
<td>39.5</td>
<td>50.0</td>
</tr>
<tr>
<td>头孢噻肟</td>
<td>0.0</td>
<td>1.2</td>
<td>3.2</td>
<td>10.0</td>
<td>7.9</td>
<td>29.6</td>
</tr>
</tbody>
</table>


discussion

伤寒、甲、乙、丙副伤寒沙门菌耐药情况及鼠伤寒沙门菌耐药情况的分析表明，伤寒、甲、乙、丙副伤寒沙门菌耐药情况的变化趋势与鼠伤寒沙门菌耐药情况的变化趋势相似，但伤寒、甲、乙、丙副伤寒沙门菌耐药情况的变化趋势较明显。未发现其他三重耐药株。在

...
国外文献报道的多重耐药谱表型相同的菌株。但在株鼠伤寒沙门菌中有株多重耐药表型的菌株，且均分离于年，可能预示类似多重耐药株的逐渐增多。另外，从表中可以看到，近年来国内非伤寒沙门菌耐药性增长较快。是否与食源性动物中大量使用抗菌药有关，有待进一步的监测和研究。很多调查资料显示，抗菌药作为促生长剂在农业、畜牧业特别是食源性动物中的广泛应用产生的抗菌药选择压力，促进了微生物耐药性的出现和传播。因此，耐药性人畜共患致病菌通过食物链传播给人类应该引起足够的重视。

10. Aarestrup FM, Jensen NE, Jorsal SE et al. Emergence of resistance to fluoroquinolones among bacteria causing infections in food animals in Denmark. Vet Rec 2000;146:76-78