ANTIMICROBIAL SUSCEPTIBILITIES OF RECENT CLINICAL ISOLATES OF GROUP B STREPTOCOCCI (GBS) FROM BELGIUM

P. Melin(1), J. Maquet(2), G. Rodriguez Cuns(2), M.P. Hayette(2), G. Christiaens(1) and P. De Moi(1)

(1) Belgian reference laboratory for GBS, Microbiology, University Hospital of Liège, Liège, Belgium; (2) Universidad de la Republica, Montevideo, Uruguay

ABSTRACT

Background: GBS cause severe infections in neonates, pregnant women and other adults. Empiric therapy is usually started before susceptibility results are available. Early neonatal diseases can be prevented with intrapartum antibiotic prophylaxis based on accurate susceptibility surveillance. Previous Belgian surveillance data observed an increase of 3 to 10% R to erythromycin (EM) through the 1990s.

Methods: 187 GBS isolates consecutively received at the reference laboratory between 2001 and March 2003 were from 72 neonates (52 early-onset and 21 late-onset diseases), 52 adults and 62 from emergency women’s regimens. MICs of penicillin (PG), EM and clindamycin (CM) and gentamicin (GM) were determined with Etest. MICs were also determined by inactivating the drug in MIC plates using beta-lactamase from the C. maltose and EM double disk to determine macrolide R phenotypes.

Results: All strains were susceptible (S) to PG and no tolerance was observed with MICs varying between 0.06 μg/ml and 2 μg/ml, 98% fell MIC breakpoints according to NCCLS January 2002. PG MICs were also determined by inactivating the drug in MIC plates using beta-lactamase from the C. maltose and EM double disk to determine macrolide R phenotypes. 100% were S to EM.

Conclusions: Prevalence of R to macrolides has increased since 1995, particularly in adult babies and the strain characterized by beta-lactamase, a new procedure to investigate beta-lactamase, a new procedure to investigate

MATERIAL & METHODS

Strains

A total of 187 clinical isolates collected in laboratories belonging to the national surveillance network, and sent to the Belgian reference laboratory for GBS between January 2001 and March 2003 (see table1). All strains are serotyped and stored in skimmed milk at -80°C.

Table 1: Description of the 187 clinical isolates of GBS: age groups and diagnostics

<table>
<thead>
<tr>
<th>Isolate</th>
<th>Number</th>
<th>Neonate</th>
<th>Early Onset Disease (EOD)</th>
<th>Late Onset Disease (LOD)</th>
<th>Pregnant and non-pregnant</th>
<th>Severe invasive infections</th>
<th>Pregnant woman</th>
<th>Recto-vaginal colonization</th>
</tr>
</thead>
<tbody>
<tr>
<td>72</td>
<td></td>
<td>14</td>
<td>13</td>
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<tr>
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<tr>
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<tr>
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<td>32</td>
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<td>8</td>
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</tr>
</tbody>
</table>

Determination of MICs

Etest® method (AB Biodisk, Sweden) with benzylpenicillin (PG), erythromycin (EM), clindamycin (CM) and gentamicin (GM). MIC is the lowest concentration of the drug causing no visible growth after an incubation period of 18-24 h at 35°C. MIC resistance breakpoints according to NCCLS January 2002.

Table 2: Distribution of macrolide resistance phenotypes among GBS resistant to ERY

<table>
<thead>
<tr>
<th>Phenotype</th>
<th>Cross R with CL (%)</th>
<th>% of ERY-R GBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLS</td>
<td>20</td>
<td>34</td>
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</table>

DISCUSSION AND CONCLUSION

As in the different surveillance studies of GBS antimicrobial susceptibilities, all isolates remain fully susceptible to Penicillin. Furthermore, with B/MIC M > 2, no tolerance phenomenon was observed. The Etest® assay combined with β-lactamase, a new procedure to investigate resistance to β-lactam antibiotics is easy to perform. With a low workload, it allowed testing of numerous isolates in a short time.

The increase of resistance to macrolides becomes a relevant problem. In the 1990s, ERY-R increased in Belgium from 3 to 10%. For the last 2 years, R rate increased significantly, particularly in GBS serotype V and in isolates from adult infections. But serotype V isolates, in Belgium, are more frequent among isolates from adults. As already reported in the 1990s, most of ERY-R isolates had a MLS phenotype. Neither macrolides nor lincosamides should be recommended anymore for empiric therapy of GBS infections.

In 1998, Flieter et al reported 8% of high level R (HLR) to erythromycin among clinical isolates of GBS. In Belgium, no HLR to GM was reported in the 1990s. In this study, some strains showed a relatively high resistance to gentamicin. Therefore, the potential synergy of PEN + GM should be investigated.

Resistance surveillance to all classes of potentially useful antibiotics is mandatory to detect drifts in susceptibility and to constantly validate empiric regimens and for targeting individual therapy in severe GBS infections.

REFERENCES

- NCCLS 2002 - Methods for dilution antimicrobial... 778 a competitor ?
- Prevention of perinatal group B streptococcal disease: Revised guidelines from CDC. MMWR 2002;51 (RR-11), 1-22