SEROTYPE DISTRIBUTION OF GROUP B STREPTOCOCCI (GBS) IN BELGIUM: ISOLATES FROM NEONATAL INFECTION COMPARED TO ISOLATES FROM INFECTIOUS DISEASE IN ADULT OR COLONIZATION IN PREGNANT WOMAN

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ABSTRACT

To establish the current Belgian distribution of GBS serotypes causing infections in different patients’ age-groups or colonizing pregnant women.

OBJECTIVES

To determine the current serotype distribution of GBS isolates from neonatal infections as compared to colonization in pregnant women.

BACKGROUND

Group B streptococci (GBS) are known to cause a range of serious infections in neonates, pregnant women and non-pregnant adults. In the last decade, the number of reported cases of GBS has increased, with neonates being at the highest risk. In addition, GBS is known to cause infections in different patients’ age-groups, or colonizing pregnant women.

MATERIAL & METHODS

Bacterial isolates

- From patients with invasive GBS infection:
- From patients with invasive GBS infection:

1. From neonates:
2. From adults:
3. From pregnant women:

RESULTS

- Table 1: Distribution of GBS serotypes among different groups of Belgian patients, from 1999 and from January through March 2002 (Percent with serotype):

<table>
<thead>
<tr>
<th>Serotype</th>
<th>Neonates (EOD and LOD)</th>
<th>Infected Adults (Pregnant or not)</th>
<th>Colonized Pregnant Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia</td>
<td>16.3</td>
<td>4.6</td>
<td>26.3</td>
</tr>
<tr>
<td>Ib</td>
<td>13.9</td>
<td>14.6</td>
<td>13.3</td>
</tr>
<tr>
<td>II</td>
<td>16.6</td>
<td>13.1</td>
<td>14.9</td>
</tr>
<tr>
<td>III</td>
<td>41.3</td>
<td>85.3</td>
<td>23.1</td>
</tr>
<tr>
<td>IV</td>
<td>1.1</td>
<td>0.9</td>
<td>5.3</td>
</tr>
<tr>
<td>V</td>
<td>8.7</td>
<td>4.8</td>
<td>19.5</td>
</tr>
<tr>
<td>NT</td>
<td>0.0</td>
<td>0.0</td>
<td>8.1</td>
</tr>
</tbody>
</table>

- Figure 1: Comparison between distributions of GBS serotypes in neonates in Belgium:

**DISCUSSION AND CONCLUSION**

- Serotype III predominated in neonatal infections:
- The serotype distribution of GBS isolated from neonates since 1999 showed that serotype III was predominantly responsible for neonatal infections. This was consistent with the results of population-based studies from other countries, such as the US and Canada. The predominant serotype III isolates were associated with invasive disease, indicating a higher virulence for this serotype in neonates.

- All serotypes were represented in adults:
- In adults, all serotypes were represented except type IV, which was less common. The distribution of serotypes among adults showed a similar trend to that observed in neonates, with serotype III being the most prevalent.

- The distribution of serotypes among adults with invasive disease in pregnant women:
- Pregnant women were also infected with GBS, with serotype III being the most common. The distribution of serotypes among pregnant women was consistent with the results of population-based studies from other countries, such as the US and Canada.

- The importance of ongoing surveillance:
- Ongoing surveillance of GBS serotypes is important for understanding the current distribution of GBS in Belgium and for developing effective strategies for preventing and controlling GBS infections.

REFERENCES

- *Serotype III predominant in neonatal infections* in this study of the serotype distribution of GBS isolated from neonates since 1999, we showed that serotype III, followed by serotype II and then serotype I, caused the most cases of disease. In our study, serotype III accounted for 35.7% of all cases whereas it was less in other reports from the US. In our study, serotype V accounted for 8.7% in EOD, which is consistent with the occurrence reported in North America, around 15% and in Finland, 1%. In our series, non-typhoidal isolates had not caused any neonatal EOD or LOD.

- All serotypes were well represented in adults, except serotype IV:
- In adults, all serotypes were well represented except type IV, which was less common. The distribution of serotypes among adults showed a similar trend to that observed in neonates, with serotype III being the most prevalent.

- The serotype distribution of isolates causing neonatal EOD may be significantly different from the distribution in adults with invasive infection (P < 0.001), but it was also different from the distribution observed in colonizing strains during pregnancy (P < 0.001). Even though rate of GBS vertical transmission from mother to infant has been shown independent from serotype, our data suggested a higher virulence for serotype III isolates or an increased neonatal susceptibility to this serotype.

- No significant change in serotype distribution over a 3-year period:
- These data highlight the importance of ongoing national monitoring of serotypes to ensure appropriateness of preventive human GBS vaccine introduction.

- The major responsibility of serotype III in neonatal infections:
- The major responsibility of serotype III in neonatal infections is the cause of neonatal life-threatening infections, septicaemia, pneumonia, meningitis, etc.

**REFERENCES**

- *Serotype III predominant in neonatal infections* in this study of the serotype distribution of GBS isolated from neonates since 1999, we showed that serotype III, followed by serotypes Ia and II and predominantly caused EOD, whereas serotype III alone caused 89.7% of LOD. These distributions are consistent with results of population-based studies from Canada. Similarly to our population, serotype III was also the most common serotype causing neonatal infections in Canada or Finland, accounting for more than 40% of all cases whereas it was less in other reports from the US. In our study, serotype V accounted for 8.7% in EOD, which is consistent with the occurrence reported in North America, around 15% and in Finland, 1%. In our series, non-typhoidal isolates had not caused any neonatal EOD or LOD.

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