ABSTRACT

Background: Streptococcus agalactiae is the major cause of early onset infectious disease (EOD) in neonates, but it is also responsible for severe infections among adults. Associated with high morbidity and mortality, empiric therapy can start before availability of susceptibility results and most of EOD can be prevented through intrapartum chemoprophylaxis. Therefore surveillance for emerging resistance (R) has to be conducted.

Methods: Activity of 11 antibiotics was studied against 393 strains referred to the Belgian GBS reference laboratory. Their susceptibilities were determined by the agar dilution method according to NCCLS guidelines. Between 1989 – 1991, 158 strains (S1) were collected: 56 from invasive infections in neonates, 80 from severe infections in adults, and 22 from colonization. Between 1996 – 1999, 235 strains (S2) were collected: 67 were recovered from severe infections in neonates, 80 from invasive infections in adults and 88 from colonization.

Results: All strains were fully susceptible to the tested β-lactam antibiotics (penicillin, amoxicillin and ceftiroxime) with MICs < 0.062 mg/L. Between 1989 – 1991, 105 of 158 (66.3%) S1 and 17/235 (7.2%) S2 isolates were resistant (R) to clindamycin, 19/158 (12%) S1 and 31/235 (13.2%) S2 isolates were intermediate, and 8/158 (5.1%) S1 and 16/235 (6.8%) S2 isolates were resistant to tetracycline. Ampicillin and ceftriaxone showed MICs < 0.25 mg/L and 0.062 mg/L, respectively. For erythromycin (E), 10% of S1 and S2 isolates were R. For clindamycin, R rates were 10% and 15% respectively for S1 and S2 isolates. Interpretations were made against 77% of GBS isolates and 23% of NCTC reference strain ATCC 49619. Between 1996 – 1999, 113/235 (48.4%) S2 isolates were R to E.

Conclusions: 1) Susceptibility patterns remained relatively constant between the S1 and S2 isolates. Any significant difference was observed but just a trend of increasing R to E. 2) β-lactams have maintained a high level of activity. 3) Ongoing surveillance for R and mechanisms of β-lactam resistance – clindamycin is imperative.

INTRODUCTION

Streptococcus agalactiae (GBS) continues to be the major cause of early onset infectious disease (EOD) in neonates, but it is also responsible for late onset disease (LOD) in neonates and for severe infections among adults. Associated with high mortality and morbidity, empiric therapy is usually started before availability of susceptibility results and most of EOD can be prevented through intrapartum chemoprophylaxis. Furthermore, increasing resistance in streptococci is currently becoming recognized, therefore surveillance for emerging resistance among GBS has to be conducted.

MATERIAL & METHODS

Bacterial strains

Clinical isolates

A total of 393 isolates collected through the whole country during two periods, 1989-1991 and 1996-1999, and referred to the Belgian GBS reference laboratory were tested in this study. The isolates were maintained at -70°C.

Strains isolated from

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<tr>
<td>EDG and LOD in neonates</td>
<td>67</td>
<td>22</td>
<td>89</td>
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<tr>
<td>Invasive infections in adults</td>
<td>56</td>
<td>60</td>
<td>116</td>
</tr>
<tr>
<td>Colonization</td>
<td>102</td>
<td>60</td>
<td>162</td>
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<tr>
<td>TOTAL</td>
<td>158</td>
<td>235</td>
<td>393</td>
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O.C. Strains

Streptococcus pyogenes | ATCC® 49929 |
Streptococcus faecalis | ATCC® 51269 |
Streptococcus mutans | ATCC® 20735 |

Determination of MICs

Susceptibilities to penicillin, ampicillin, ceftriaxone, vancomycin, erythromycin, ciprofloxacin, rifampicin, gentamicin, amikacin and tetracyclines were determined by the agar dilution technique according to criteria from the National Committee for Clinical Laboratory Standards, guidelines M-100-S8, for interpretation.

DISCUSSION AND CONCLUSION

To prevent EOD in neonates, intrapartum chemoprophylaxis with penicillin or ampicillin is recommended; alternatively for penicillin allergic patient, clindamycin or erythromycin is used. And, for empiric therapy, penicillin and an aminoglycoside are frequently used for management of serious infections. As tolerance to penicillin, increased resistance to erythromycin - clindamycin and high level of resistance (HLR) to aminoglycosides are reported for GBS, our study was designed to determine and to compare susceptibilities of Belgian GBS isolates collected recently to isolates collected between 1989 - 91.

- No significant change was observed in the in vitro susceptibility of GBS strains to the 11 tested antibiotics.
- All isolates have remained uniformly susceptible to β-lactam antibiotics.
- No strains with HLR to aminoglycosides was detected.
- An increasing trend in the isolation rate of erythromycin resistant strains is shown.
- Ongoing monitoring for resistance and mechanisms of resistance to erythromycin and clindamycin is imperative.

REFERENCES


