PREVALENCE OF ermB, ermTR AND mefA/B GENE CLASSES AMONG ERYTHROMYCIN-RESISTANT GROUP B STREP TOCCOCCUS (GBS) ISOLATES COLLECTED IN BELGIUM

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ABSTRACT

BACKGROUND

Emergence of erythromycin (Er) and clindamycin (Cm) resistance (R) observed in GBS, is currently becoming recognized.

GROUP B streptococci (GBS) or Streptococcus agalactiae are the leading bacterial cause of meningitis and sepsis in neonates. Penicillin is the treatment of choice for these infections or for intrapartum prophylaxis, but erythromycin and clindamycin are effective recommended alternatives in the penicillin allergic patients.

PROBABLY as a consequence of the important use of erythromycin, macrolides and related drugs resistance among streptococcal isolates is currently becoming recognized in many countries. In 1999, among clinically significant isolates of S. agalactiae collected in different areas of Belgium, the prevalence of erythromycin resistance fluctuated between 10 and 20 %.

Different known mechanisms account for acquired resistance to macrolides in streptococci as the target site modification by 23S rRNA methylases, encoded by erm genes. The Erm enzymes confer cross-resistance to macrolides, lincosamides and the streptogramin B component, so-called MLSB phenotype. MLS resistance may be inducible or constitutive. Another mechanism involved in the active efflux, only affects 14- and 15-membered macrolides but not 16-membered macrolides, neither lincosamides or streptogramins (M phenotype) and is encoded by mef genes.

Material & Methods

Strains

Clinical isolates: by comparison to the abstract, results presented have been extended to a larger population of strains.

Description of 561 strains of GBS from which Erythromycin-resistant isolates were selected

RESULTS

Collection 1 Collection 2

Erythromycin-R phenotypes of GBS isolates determined by double disk test and with Etest strips. Clindamycin on the right and Erythromycin on the left. (a) constitutive resistance: cMLS, (b1) and (b2) inducible resistance: iMLS and (c) erythromycin resistance alone; M

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Distribution of resistance genes within the different phenotypes

In Belgium by year 2000, prevalence of macrolide resistance among S. agalactiae isolates exceeded 10 %.

Resistance was mainly caused by target-site modification (erm, ermTR) mechanisms. These isolates demonstrated MLS phenotypes, either constitutive or inducible.

The presence of two erm genes could be demonstrated in one isolate.

Eflux (mefA/B) resistance mechanism was also prevalent among S. agalactiae isolates. These isolates demonstrated a M phenotype.

Erythromycin MICs were well correlated with genotypes. The high level of Erythromycin-resistance for some ermTR isolates could be due to an unknown resistance gene.

These results indicate the possibility of inappropriate prophylaxis or empiric treatment using clindamycin or erythromycin as recommended alternatives in penicillin-allergic patients.

Because of these data, routine susceptibility testing at least for erythromycin and continuing surveillance of S. agalactiae macrolide-R are advisable.

REFERENCES

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