

COMUNICACIÓN CORTA – SHORT REPORT

Antimicrobial Activity of Certain Drugs against Streptococcus agalactiae Strains in a General Hospital of Caracas, Venezuela 1997-2003

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Acta Científica Estudiantil 2007; 5(3):115-118.

Resumen

En el presente estudio se realiza una evaluación de la actividad antimicrobiana de ciertas drogas contra cepas de *Streptococcus agalactiae* aisladas de infecciones en un hospital general de Caracas, Venezuela, en el período 1997-2003. *S. agalactiae* mostró 18,8% de resistencia a clindamicina, 16,4% a ciprofloxacina, 9,8% a eritromicina. Para penicilina la sensibilidad fue de 98.9%. No se observó resistencia a teicoplanina o a vancomicina (100% sensible).

Palabras Clave: *Streptococcus agalactiae*, resistencia, antimicrobianos, salud pública.
(fuente: DeCS Bireme)

Abstract

Group B streptococci (GBS) are emerging as a cause of serious infection worldwide. The capsular polysaccharides are not only important virulence factors but also the target of vaccine development efforts. Increasing resistance of group B *Streptococcus* to clindamycin and erythromycin has been noted in many parts of the world. Objective: To describe resistance patterns of *Streptococcus agalactiae* isolated from clinical samples in a general hospital of Caracas, Venezuela. We evaluated *Streptococcus agalactiae* strains isolates collected from patients with suspected infections in a hospital of Caracas, Venezuela (West General Hospital) between 1997–2003. For the studied period, 120 clinical strains were isolated. Methodology: Clinical samples were processed and identified with standard cultures and biochemical tests. In vitro antimicrobial susceptibility of the isolates was assessed by an agar disk diffusion method using Mueller-Hinton agar as recommended by the National Committee for Clinical Laboratory Standards (NCCLS). Isolates were tested against 12 drugs, including: clindamycin, ciprofloxacin, erythromycin, chloramphenicol, penicillin, teicoplanin and vancomycin. Results: *S. agalactiae* showed 18.8% of resistance to clindamycin, 16.4% to ciprofloxacin, 9.8% to erythromycin. Intermediate resistance/susceptibility to clindamycin was observed in 11.8%, 46.3% against ciprofloxacin, 20.7% to erythromycin and 27.0% to chloramphenicol. Susceptibility was higher for penicillin (98.9%). No teicoplanin or vancomycin resistance was observed (100% susceptible). Discussion: Careful surveillance of *S. agalactiae* invasive infections in Venezuela is essential. In conclusion, GBS isolates from Caracas exhibit rates of macrolide and lincosamide resistance similar to those in other parts of the world but probably differ in the distribution of resistance phenotypes.

Key Words: *Streptococcus agalactiae*, resistance, antimicrobials, public health.
(Source: DeCS Bireme)

Introduction

Group B streptococcus (*Streptococcus agalactiae*) is still of great relevance in the perinatal period, although maternal antimicrobial prophylaxis has significantly reduced the rate of culture-confirmed invasive infection in neonates.

Another important issue is the emergence of antimicrobial drug resistance, for this reason surveillance studies are necessary.

Objectives: To describe resistance patterns of *Streptococcus agalactiae* isolated from clinical samples in a general hospital of Caracas, Venezuela.

Significance: Group B streptococci (GBS) are emerging as a cause of serious infection worldwide. The capsular polysaccharides are not only important virulence factors but also the target of vaccine development efforts. Increasing resistance of group B *Streptococcus* to clindamycin and erythromycin has been noted in many parts of the world.

Materials and Methods

Study: We evaluated *Streptococcus agalactiae* strains isolates collected from patients with suspected infections in a hospital of Caracas, Venezuela (West General Hospital) between 1997–2003.

Setting: Urban general hospital of Caracas, Venezuela (West General Hospital) between 1997–2003.

Study population: For the studied period, 1200 clinical strains were isolated.

Methodology: Clinical samples were processed and identified with standard cultures and biochemical tests. In vitro antimicrobial susceptibility of the isolates was assessed by an agar disk diffusion method using Mueller-Hinton agar as recommended by the National Committee for Clinical Laboratory Standards (NCCLS). Isolates were tested against 12 drugs, including: clindamycin, ciprofloxacin, erythromycin, chloramphenicol, penicillin, teicoplanin and vancomycin.

Results

Streptococcus agalactiae showed 18.8% of resistance to clindamycin, 16.4% to ciprofloxacin, 9.8% to erythromycin.

Intermediate resistance/susceptibility to clindamycin was observed in 11.8%, 46.3% against ciprofloxacin, 20.7% to erythromycin and 27.0% to chloramphenicol.

Susceptibility was higher for penicillin (98.9%) (Graphic 1). No teicoplanin or vancomycin resistance was observed (100% susceptible) (Graphic 1).

Discussion

Increasing resistance of group B *Streptococcus* (GBS) to clindamycin and erythromycin has been reported in many parts of the world ¹⁻¹⁰. Studies from North America have documented clindamycin and erythromycin resistance rates of 2 to 15% and 7 to 32%, respectively ^{1, 4, 7, 9-12}. In some asean-pacific countries, as Taiwan, rates of 43 and 46%, respectively, have been reported ⁶. In New Zealand rates of 15 and 7.5%, respectively, have been reported ¹³. A study from Australia demonstrated an erythromycin resistance rate of only 2.8% ¹⁴.

In South America, recent studies from Argentina noted that 4.5% and 6% of GBS isolates were resistant to clindamycin and erythromycin, respectively ¹⁵. In Venezuela, last published study about GBS was more than 10 years ago, no reporting antimicrobial resistance ¹⁶.

The findings of this study indicate that there is a clinically significant level of macrolide and lincosamide resistance in GBS isolates from Caracas, Venezuela.

The most widely documented resistance patterns are the macrolide-lincosamide streptogramin B phenotype, conferring coresistance to erythromycin and clindamycin, and the M phenotype, conferring resistance to only erythromycin ¹⁷.

Our most common resistance phenotype demonstrated predominantly resistance to clindamycin.

In conclusion, GBS isolates from Venezuela exhibit rates of macrolide and lincosamide resistance similar to those in other parts of the world. Surveillance and study are continuously necessary to monitoring increasing resistance rates in GBS isolates and locally guide antimicrobial therapy, when allergy to penicillin is a contraindication to use this drug and instead, to use alternative appropriate antimicrobials.

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Graphic 1. Antimicrobial drug susceptibility (%) of SGB against tested antibiotics (WGH, Venezuela, 1997-2003)

