EFFICACY OF SOLITHROMYCIN FOR TREATMENT OF EXPERIMENTAL SYPHILIS INFECTION

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Abstract

Background: Since 2000, macrolide resistance mutations have been observed in the 23S rRNA ribosomal subunit from many geographic regions. Solithromycin (SOLI) is a first-in-class, orally administered, once-daily macrolide which could overcome macrolide resistance conferred by a single base change in tka, the 23S rRNA gene in Mycoplasma pneumoniae.

Methods: Strains of T. pallidum were isolated from experimentally infected rabbits. A2058G and A2059G mutants were evaluated for in vitro sensitivity as described by Nichols et al. (1991, 1992). For in vivo testing, rabbits were treated with SOLI (10 mg/kg) or benzathine penicillin G (BPG) (200,000 U IM) or untreated (Cont). Serum antibodies for T. pallidum were determined by ELISA and VDRL tests. All antibiotics tested were effective against wild type Nichols strain.

Results: The prevalence of these mutations has increased rapidly in many cities since their introduction. Both SOLI and benzathine penicillin G were effective against wild type, A2058G, and A2059G strains of T. pallidum, but not Street 14 and UW330B, which are not susceptible to macrolides. Furthermore, blood titers were significantly lower in all treatment groups compared to untreated controls. In particular, SOLI treated rabbits showed significantly higher blood titers at week 6 compared to untreated controls. There was no persistent infection with SOLI or BPG treated rabbits, while untreated and AZ treated rabbits were not significantly different from untreated controls.

Conclusions: SOLI was effective in treatment of infection by wild type, A2058G, and A2059G strains of T. pallidum, but not Street 14 and UW330B, which are not susceptible to macrolides. Furthermore, blood titers were significantly lower in all treatment groups compared to untreated controls. In particular, SOLI treated rabbits showed significantly higher blood titers at week 6 compared to untreated controls. There was no persistent infection with SOLI or BPG treated rabbits, while untreated and AZ treated rabbits were not significantly different from untreated controls.

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