Whether immunostimulants are effective in susceptible children suffering from recurrent respiratory tract infections: a modeling analysis based on literature aggregate data

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Abstract

Background: Immunostimulants are gradually being used in the prevention and treatment of recurrent respiratory tract infection (RRTIs) in susceptible children, but its drug effects has not been quantified. The purpose of this paper is to confirm the efficacy of immunostimulants in the prevention and treatment of RRTIs in susceptible children. Methods: Model-based meta-analysis (MBMA) was used to describe the time-course of placebo and immunostimulants in the prevention of RRTIs in children. The cumulative number of acute respiratory tract infections (ARTIs) was used as the indicator of efficacy. The single-arm meta-analysis was used to analyze the incidence of drug related adverse events. Results: A total of 14 articles with 2,400 pediatric subjects were finally included for analysis. The results showed that the cumulative number of ARTIs increased linearly with time, and the incidence of ARTIS in the placebo group was 0.65 (95% CI: 0.55 to 0.75) per month. OM-85 BV and pidotimod significantly reduced the incidence of ARTIs by 0.21 (95% CI: 0.16 to 0.26) and 0.19 (95% CI: 0.17 to 0.21) compared with placebo per month, respectively. The incidence of drug-related adverse events of pidotimod and OM-85 BV was comparable with that of placebo. Conclusions: Pidotimod and OM-85 BV can effectively reduce the incidence of ARTIs in susceptible children, and there is no significant increase in the incidence of drug-related adverse events. This study provides quantitative support for the application of immunostimulants for the prevention of recurrent respiratory tract infection in children.

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