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Comparison of virus shedding after lived attenuated and pentavalent reassortant rotavirus vaccine

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Abstract

Transmission of rotavirus vaccine or vaccine-reassortant strains to unvaccinated contacts has been reported. Therefore, it is essential to evaluate and characterize the nature of vaccine-virus shedding among rotavirus vaccine recipients. Two groups of healthy infants who received a complete course of RotaTeq (RV5) or Rotarix (RV2) were enrolled (between March 2010 and June 2011) to compare fecal shedding for one month after each vaccine dose. Shedding was assessed using both enzyme immunoassay (EIA) and real-time reverse transcription-polymerase chain reaction (RT-PCR). Eighty-seven infants (34 girls and 53 boys) were enrolled in the study. After the first vaccine dose, the peak time of virus shedding occurred between day 4 and day 7, with positive detection rates of 80-90% by real-time RT-PCR and 20-30% by EIA. In both groups, vaccine shedding occurred as early as one day and as late as 25-28 days. Mixed effects logistic regression analysis of real-time RT-PCR data showed no significant differences between two groups when shedding rates were compared after the first vaccine dose (odds ratio [OR] 1.26; P=0.71) or after the second vaccine dose (odds ratio [OR] 1.26; P=0.99). However, infants receiving RV2 shed significantly higher viral loads than those receiving RV5 when compared after the first vaccine dose (P=0.001) and after the second dose (P=0.039). In terms of shedding rates detected by real-time RT-PCR, vaccine uptake of RV5 or RV2 among infants in Taiwan was comparable. Clinical significance of higher shedding viral loads in RV2 should be further observed.

Keywords: Rotavirus vaccine; Shedding.