TRANSPLACENTALLY TRANSFERRED MATERNAL-INFANT ANTIBODIES TO DENGUE VIRUS

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Antibodies of all four dengue virus serotypes were detected by hemagglutination inhibition (HI) in 97% of 2,000 infants' cord sera at the time of delivery. In comparison with 250 mother-infant's paired sera, we found that 53% of the infants' serum HI titers were higher than those of the mother's. The mother/infant IgG subclasses 1, 2, 3, and 4 titers were 53.1/87.0, 8.4/11.7, 0.14/0.11, and 1.1/1.0 mg/dL, respectively. In 18 months of follow-up of 100 infants studied, we observed that antibody to dengue virus disappeared in 3% by two months of age, in 19% by four months of age, in 72% by six months of age, in 99% by nine months of age, and in 100% by 12 months of age, with a half-life of 41 days. We conclude that the antibodies to dengue virus disappeared in the first year of life. We suggest that the most appropriate age for vaccination with a live-attenuated dengue vaccine in an endemic area is one year of age.


US. ARMY DENGUE VACCINE DEVELOPMENT EFFORT


Dengue is an expanding public health problem in the tropics and subtropics. Reports suggest 2.5 billion people are at risk for infection with up to 100 million dengue virus infections, and more than 60,000 reported deaths. Prevention of dengue through widespread vaccination is an important objective of the World Health Organization, the governments of dengue endemic regions, and the United States Army. The Walter Reed Army Institute of Research (WRAIR) has developed live attenuated monovalent DEN-1, -2, -3, and -4 vaccine candidates. The most promising monovalent components were mixed to produce numerous tetravalent dengue vaccine (TDV) formulations. These formulations have been tested in small numbers of human subjects and Formulation (F) 17 has emerged as a promising TDV candidate. To date, 144 human subjects have received various formulations of the WRAIR TDV. Recent testing of F 17 in non-immune adult volunteers who received two vaccine doses 6 months apart, was completed without serious or unexpected adverse events. Feverishness, chills, and headache were the most common adverse events. Fever >102 °F occurred in 2/23 recipients and generalized rash occurred in 5/23 after dose #1. There was no fever and 1 episode of rash in 16 volunteers who received dose #2. Mean Reactogenicity Index scores were 9.8 ± 2.1 and 5.4 ± 1.3 following dose #1 and #2, respectively. The percent seroconversion (PRNT50 ≥ 1:10) after dose #2 in 16 recipients for DEN-1, -2, -3, and -4 was 69%, 100%, 81%, and 94%, respectively. The level of neutralizing antibody to each virus serotype (reciprocal GMT) after dose #2 was 16, 97, 28, and 142, respectively. Based on these data, the Department of Virology at AFRIMS plans further clinical trials of F 17, starting with a small phase I/II study in 5 to 10 Thai children ages 6 to 9 beginning in the summer of 2003.