LETTER TO THE EDITOR

Adjusted EBV Seroprevalence in Infants: Impact of Maternal IgG on IgG Interpretation

Pathum Sookaromdee [1], Viroj Wiwanitkit [2]

[1] Private Academic Consultant, Bangkok, Thailand
[2] Department of Research Analytics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India

Correspondence:
Pathum Sookaromdee
Private Academic Consultant
Bangkok
Thailand
Email: pathumsook@gmail.com

LETTER TO THE EDITOR

Epstein-Barr virus (EBV) is a common herpesvirus that can live in the body for years after infection, particularly in low- and middle-income nations. Infection is particularly common throughout early life. IgG antibodies to viral capsid antigen (VCA) are commonly employed in clinical laboratories and epidemiological investigations to detect previous infections. However, in infants and young children, particularly those under the age of 12 months, IgG results must be interpreted with caution since maternal antibodies may interfere with them.

Maternal IgG antibodies can be passed from the placenta to the infant during the final trimester of pregnancy and stay in the infant's bloodstream for up to 6 - 12 months after delivery. A positive EBV IgG test result in a young infant may not indicate actual infection. However, antibodies acquired from the mother may mislead the assessment of the true infection incidence at this age.

According to one publication [1], the prevalence of EBV VCA IgG antibodies in children aged 6 months to 2 years was 35.9%. According to another publication [2], the cumulative incidence of actual infection in babies was only 12.9% at 6 months and rose to 47.4% at 12 months. This shows that the IgG frequency reported in early infancy is partially related to maternal immunization, particularly at 6 months. For adjustment, the formula calculates actual seroprevalence by subtracting the proportion of IgG positive due to maternal antibodies - derived from the difference between total seropreva-

lence and age-specific infection incidence - from the observed data. The disparity between the prevalence (35.9%) and cumulative incidence of infection (12.9%) shows that up to 23% of newborns with positive IgG could be due to maternal immunity rather than actual infection.

Given that maternal immunity drops dramatically after 12 months of age, we reasoned that older prevalence numbers were more likely to represent genuine infection. Therefore, we assessed the genuine infection rate for the ages of 6 to 24 months using published infection rates of 12.9% at 6 months and 47.4% at 12 months, as well as estimations based on known epidemiological patterns of infection of up to 70% at 18 months and 90% at 24 months. By averaging the data over the four age ranges (12.9%, 47.4%, 70%, and 90%), the true mean infection rate for children aged 6 - 24 months was around 55.1%, which was much higher than the uncorrected prevalence (35.9%).

This distinction emphasizes the need of calibrating serological testing in newborns and young children to discriminate between maternal immunity and genuine illness, as failure to do so may result in misinterpretations at both the clinical and epidemiological levels. This method provides for more precise estimations of illness burden. More specific interpretations of age groups should be encouraged. If possible, IgM antibody or viral DNA tests should be utilized to confirm actual infection.

This commentary applies known scientific concepts to the existing data to more precisely reflect the true infection rate, and it clearly highlights the role of maternal immunity throughout the first month of life. This adjustment approach can be applied to other serological tests used in clinical laboratories, particularly those testing for immunity to infections transmissible through maternal immunity, such as measles, rubella, or CMV, which, if not carefully considered, can lead to misunderstandings in diagnosis or public health planning.

Declaration of Interest:
None.

References:

1. Tantipraphat L, Sudhinaraset N, Thongmee T, et al. Epstein-Barr virus seroprevalence in Thailand: A temporal and global perspective with health care and economic correlations. Am J Trop Med Hyg 2025 Apr 29:tpmd240857.
    https://discovery.researcher.life/article/epstein-barr-virus-sero
    prevalence-in-thailand-a-temporal-and-global-perspective-with-
    health-care-and-economic-correlations/bb8c6d1b072a30519b12
    a1eb30a7d817

2. Minab R, Bu W, Nguyen H, et al. Maternal Epstein-Barr virus-specific antibodies and risk of infection in Ugandan infants. J Infect Dis 2021 Jun 4;223(11):1897-904. (PMID: 33095855)