



Change in Dengue and Japanese Encephalitis Seroprevalence Rates in Sri Lanka

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Abstract

Background

Sri Lanka has been affected by epidemics of dengue infections for many decades and the incidence and severity of dengue infections have been rising each year. Therefore, we investigated the age stratified seroprevalence of dengue infections in order to facilitate future dengue vaccine strategies. In addition, since the symptomatic dengue infections have increased during the past few decades, we also investigated the possible association with Japanese Encephalitis Virus (JEV) antibody seropositivity with symptomatic dengue in a community cohort in Sri Lanka.

Methods

1689 healthy individuals who were attending a primary health care facility were recruited. Dengue and JEV antibody status was determined in all individuals and JEV vaccination status was recorded.

Results

1152/1689 (68.2%) individuals were seropositive for dengue and only 133/1152 (11.5%) of them had been hospitalized due to dengue. A significant and positive correlation was observed for dengue antibody seropositivity and age in children (Spearman's $R = 0.84$, $p = 0.002$) and in adults (Spearman's $R = 0.96$, $p = 0.004$). We observed a significant rise in the age stratified seroprevalence rates in children over a period of 12 years. For instance, in year 2003 the annual seroconversion rate was 1.5% per annum, which had risen to 3.79% per annum by 2014. We also found that both adults ($p < 0.001$) and in children ($p = 0.03$) who were hospitalized due to dengue were more likely to be seropositive for JEV antibodies. However, 244 (91.4%) of adults who were seropositive for JEV had not had the JEV vaccine.

Conclusions

Dengue seroprevalence rates have risen significantly over the last 12 years in Sri Lanka, possibly due to increased transmission. As individuals who were hospitalized due to dengue were more likely to be seropositive for JEV, the possibility of cross-reactive assays and/or of JEV infection on immunity to the DENV and clinical disease severity should be further investigated.

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