

X

2016

The presence of Japanese encephalitis antibodies and the risk of hospitalization due to dengue infection

Chandima Jeewandara^{1,2}, Laksiri Gomes¹, S.A. Paranavitana¹, Mihiri Thanthirimudallige¹, Sandaruwan Panapitiya¹, Jayewardane Amitha², Samitha Fernando¹, R.H. Fernando¹, Shamini Prathapan¹, Graham S. Ogg^{3,4*} and Gathsaurie Neelika Malavige^{1,3*}

Centre for Dengue Research, Department of Microbiology, ²Department of Family Medicine, Faculty of Medical Sciences, University of Sri Jayawardenapura, 10250, Sri Lanka, ³MRC Human Immunology Unit, Weatherall Institute of Molecular Medicine, Oxford NIHR Biomedical Research Centre and University of Oxford, OX3 9DS, UK, ⁴Department of Dermatology, Churchill Hospital, Oxford, OX3 7LJ, UK.

Introduction:

Due to the similarity of the Dengue virus (DENV) and Japanese encephalitis virus (JEV), JEV-specific cross reactive antibody responses could modulate DENV specific immune responses.

Since JEV co-circulates in the same geographical region as the DENV and as all children in Sri Lanka routinely receive the JEV vaccine, we set out to determine, if JEV antibody positivity was associated with severe clinical disease.

Methods: JEV-specific antibodies were determined in 1689 healthy individuals from Sri Lanka of whom 133 (9.8%) had been previously hospitalized due to dengue. In a subset of this population who were seropositive for the DENV (23 who were hospitalized and 82 who had

subclinical dengue), the past infecting DENV serotype was determined using previously defined panel of serotype specific-peptides.

Results: Both children ($p=0.03$) and adults ($p<0.01$), who were hospitalized due to dengue, were significantly more likely to have JEV-specific antibodies. Although children who were vaccinated with the JEV vaccine were more likely to be seropositive for JEV ($p=0.04$), 244 (91.4%) of the JEV seropositive adults were not immunized for the JEV. Whilst a significant correlation was not observed with JEV antibody positivity and the number of DENV serotypes individuals had been infected with, those who responded to 3 or more serotypes were more likely to be seropositive for JEV antibodies (50%), when compared to those who responded to 2 serotypes (23.2%) or one serotype (19.7%).

Conclusions: Those who were hospitalized due to dengue and those who were infected with multiple DENV serotypes, were more likely to be seropositive for JEV.

Word count has to be 250