

SHORT COMMUNICATIONS

Detection of Zika Virus Antibodies in Retrospective Serum Samples from Suspected Dengue Cases in Sarawak, Malaysian Borneo

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ABSTRACT

Sarawak, a state in Malaysian Borneo, has never reported a case of Zika virus (ZIKV) infection nor conducted any seroprevalence studies on the virus. This study aimed to provide a serological insight into ZIKV in Sarawak. 212 sera samples collected from a dengue surveillance study conducted from 2007 to 2011 were retrospectively analyzed. Samples negative for both dengue and Japanese encephalitis virus by RT-PCR were screened by immunoblots assay for ZIKV prM protein. Positive samples were further subjected to 50% plaque reduction neutralization test (PRNT50) for confirmation. 20 (9.4%) sera samples were positive for ZIKV prM protein but not against prM of dengue and Japanese encephalitis virus. These 20 samples were further subjected to PRNT50, and six samples (2.8%) showed possible seropositivity for ZIKV. This preliminary investigation provides serological evidence of ZIKV infection in Sarawak and highlights the importance of conducting surveillance programs for ZIKV in this dengue-endemic state. *Malaysian Journal of Medicine and Health Sciences* (2024) 20(1):374-377. doi:10.47836/mjmhs.20.1.46

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samples of dengue suspected cases collected for a dengue surveillance study in Kuching, Sarawak from 2007 to 2011.

INTRODUCTION

ZIKV is a member of the *flavivirus* family and is closely related to other viruses such as DENV, JEV, yellow fever and West Nile viruses. Although it generally causes mild illness, the re-emergence of ZIKV has been associated with microcephaly and other neurological disorders (1), leading to the declaration of a Public Health Emergency of International Concern by WHO in 2016 (2). While most neighboring Southeast Asian countries have reported sporadic cases and limited outbreaks of ZIKV (3), Malaysia has reported very few cases to date, with only eight cases diagnosed as of 2018 (4). Sarawak, a Malaysian Borneo state, has never reported any cases of ZIKV, although two autochthonous cases were reported in its neighboring state of Sabah in 2016 (5). One possible explanation for the lack of reported cases in Sarawak is high pre-existing levels of population immunity to ZIKV. However, no seroprevalence study on ZIKV has ever been conducted in Sarawak. This study aims to provide a preliminary insight into the serological evidence of ZIKV in Sarawak by analyzing retrospective

MATERIALS AND METHODS

Serum samples

212 serum samples were tested in this study. These retrospective febrile patients' samples were part of dengue surveillance study in Kuching, Sarawak from year 2007 to 2011 and were stored under optimal conditions. These samples were selected based on (i) tested negative by RT-PCR for both DENV and JEV in the surveillance study; (ii) sufficient volume available ($\geq 300 \mu\text{l}$). The used of archived samples is approved by the university's medical research ethics committee (FME/22/69).

Viruses and cell lines

The virus strains used in in this study were MR 766 (ZIKV), FSS 13025 (ZIKV), P6 740 (ZIKV), D2 NGC (DENV-2) and JEV Nakayama (Japanese encephalitis virus). All the viruses were propagated in C6/36 *Aedes albopictus* mosquito cell line. Neutralization test were done against MR 766 and D2 NGC virus strains using Vero cell line (African green monkey epithelial kidney cells).