

cases. (5) Severe dengue cases frequently occur in tempo-spatial dengue clusters implying the importance to find out the sources of infection. The overlapping areas between high mosquito indices and dengue clusters facilitate transmission persistence. (6) Source reduction is more effective than insecticide-spraying.

Conclusion: integrated surveillance systems, immediate interrupting transmission, and identifying mosquito breeding sites all together can reduce epidemic severity and thus promoting global health.

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Oral Session 5: Emerging & Re-emerging Infectious Diseases

Date: Saturday, Nov 19, 2022 Time: 14:00-15:30

Venue: Meeting Rooms 304 & 305

CROSS-LINEAGE PROTECTION BETWEEN CHIKV PRIMARY INFECTION AND MAYV SECONDARY EXPOSURE IN MICE

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Intro: Mayaro virus (MAYV) is a neotropical, emerging, zoonotic mosquito-borne virus that causes an acute febrile illness similar to that produced by chikungunya virus (CHIKV), a close alphavirus relative. Emergence of MAYV is sporadic and involves spillover infections, but recent outbreaks indicate that it remains a public health concern for urban emergence. With the recent arrival of both ECSA and Asian lineage CHIKV strains in the Americas, it is critical to assess their ability to cross-protect against MAYV infection. We evaluated whether CHIKV-specific immunity derived from the 3 major lineages, ECSA, IOL and Asian/American, cross-protects against MAYV infection with major genotypes L and D.

Methods: We used a type I interferon-defective C57BL/6J mouse model intradermally infected with CHIKV and, 3 months later, challenged with MAYV after treatment with an anti-Ifnar1 mAb to induce a virulent phenotype. Several indexes such as weight, signs of disease and footpad swelling were monitored up to 14 days post-infection. Viremia, neutralizing antibodies, cytokine production and T cell responses were evaluated.

Findings: CHIKV immunity induced by all three lineages conferred strong and broad cross-protection against MAYV infection, reducing disease severity (weight loss, footpad swelling and clinical manifestations), viremia and proinflammatory chemokine/cytokine levels. The anti-CHIKV antibodies showed the ability cross-neutralize MAYV and mice previously exposed to CHIKV developed a different profile of adaptive immune cells, showing an increase of total CD3+ and CD8+ T cells, combined with a decrease in CD4+ populations.

Conclusion: Our data suggest that cross-protection observed between CHIKV and MAYV is not lineage-dependent and is mediated by both humoral and cellular responses. These data indicate

that preexisting immunity produced by different CHIKV strains may reduce the impact of secondary infection by MAYV as well as the risk of human-amplified MAYV transmission, which could lead to urban emergence.

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Oral Session 5: Emerging & Re-emerging Infectious Diseases

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THE COST OF DENGUE SHOCK AND SEPTIC SHOCK IN VIETNAM

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Intro: Dengue shock (DS) and septic shock (SS) are the two most common infectious causes of shock in Vietnam. Little is known about the cost of an episode of either of these critical illnesses, from the perspective of the patient/their household. We aimed to describe the direct medical, non-medical and productivity costs associated with DS and SS.

Methods: Adults with SS and DS were recruited to a prospective observational study at the Hospital for Tropical Diseases, in Ho Chi Minh City, Vietnam from 2019-2021. We collected hospital bills, insurance status and percentage copay from hospital records, and conducted a detailed economic questionnaire with patients at hospital discharge, 1, 3 and 6 months later. The proportion of patients incurring Catastrophic Health Expenditure (CHE) and Catastrophic Costs were calculated.

Findings: The analysis included 127 patients with DS, and 35 patients with SS. 18.9% and 71.43% patients with DS and SS respectively incurred CHE (threshold at >10% annual household income). Having healthcare insurance offered slight protection against incurring CHE for patients with DS, but paradoxically the proportion of patients with CHE was higher in insured versus uninsured patients with SS. When non-medical costs and productivity costs were considered, the cost of illness (versus the hospital bill alone) increased by a factor of 6.37 and 6.73 for DS and SS respectively.

Conclusion: The true cost of DS and SS is several times higher than the hospital bill; productivity costs must be counted for patients with critical illness in LMIC. It is vital that financial protection is put in place for patients surviving critical illness in LMIC, and for families of non-survivors. As critical care capabilities expand in Vietnam, insurance reimbursement schedules must adapt to cover the high-cost interventions that patients with DS and SS require.

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