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Abstract (oral session)

Prolonged and differential shedding of dengue virus serotype 2 (DEN2) in plasma, PBMCs, saliva and urine of adult patients during acute infection

M. Sriprapun*, C. Laosakul, S. Krajiw, K. Arunyingmongkol, P. Siriyasatien, W. Kulwichit (Bangkok, TH)

Objectives: Dengue is an arthropod-borne flavivirus with worldwide distribution. Persistent infection has been described in other flaviviruses such as West Nile virus (WNV) and hepatitis C virus (HCV). Our group has recently reported live dengue virus persistence in urine during convalescence. Here we demonstrate that viral persistence is not only prolonged, but also 'differential' in body compartments. Methods: Specimens from eleven adult patients with acute DEN2 infection by standard ELISA and serotype-specific reverse transcription PCR were included in this study. Viral RNA extracted from plasma, peripheral blood mononuclear cells (PBMCs), saliva and urine during febrile and convalescent periods was subjected to dengue-specific SYBR Green real time quantitative RT-PCR. Serial dilution of known concentration of DENV-2 (PFU/ml) was constructed as standard curve to determine the amount of viral shedding in each sample. Viral load of each sample was compared in the unit of PFU/microgram RNA. Results: All patients were secondary dengue infection. 10 were DHF (DHF I = 4, DHF II = 6) and the other was DF. Dengue virus was detected in both febrile and convalescent periods in 9 of 11 patients. The viral RNA was detected in plasma (n= 9), PBMCs (n= 11), saliva (n= 8) and urine (n= 8) during febrile period and in plasma (n= 2), PBMCs (n= 1) and urine (n= 8) during convalescence. The viral loads shifted among samples and time points of infection. During the febrile period, viral loads in blood sample (plasma or PBMCs) were higher than those in saliva and in urine as well as those in convalescent samples. Interestingly, the viral loads in urine during late febrile phase were higher than those in the blood samples. Moreover in some patients, the viral loads in convalescent urine were higher than those in all corresponding febrile samples. The limit of detection was 7.38x10^-4 PFU/microgram RNA. Conclusions: Our findings not only emphasize the persistence of dengue virus but also demonstrate different degree of viral shedding among samples and infection time points. Presence of urinary dengue virus despite rising neutralising antibody in the blood may implicate kidneys as a sanctuary site. Urine may be used for dengue virus detection during convalescence. Future studies are needed to delineate this phenomenon of viral dynamics.