LETTER TO THE EDITOR

MICROALBUMINURIA AND DENGUE VIRAL INFECTIONS

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Dear Editor,

Recent reports have shown an increase in the incidence of complicated secondary dengue infections affecting different organ systems such as the liver, kidney, heart, lungs, gastrointestinal tract and central nervous system (Kadam *et al*, 2016). Of these, reports on renal manifestations of dengue infections are mostly confined to case reports and, prospective studies are scarce especially in South Asia. Vasanwala *et al* (2014) reported that the urine protein : creatinine ratio could predict and discriminate between the development of dengue fever and dengue hemorrhagic fever. At present, the associations of microalbuminuria with biochemical and clinical parameters of dengue fever are poorly understood. Therefore we attempted to study the occurrence of microalbuminuria and their association with biochemical and clinical parameters in dengue. This study was approved by the Sri Lanka ethics committee, Faculty of Medicine, University of Sri Jayawardenapura (ERC approval number 552/11).

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A prospective study was done among 170 patients with DF/DHF seen at the University Medical Unit, Colombo South Teaching Hospital, Sri Lanka. The patients fulfilled the criteria for case definition of dengue according to the WHO 2009 guidelines, supported biochemically by a rise in hematocrit, leukopenia and dropping platelets (WHO, 2009). The Urine albumin : creatinine ratio was measured and the presence of microalbuminuria was ascertained and repeated in each patient. None of the patients had comorbid features such as type 2 diabetes, hypertension or chronic kidney disease. The association of microalbuminuria and urine albumin : creatinine ratio with clinical and biochemical parameters were ascertained.

There were 87 (51%) males and 83 (49%) females with a mean age of 27.6± SD12.6 years. One hundred twelve (65.9%) were found to have microalbuminuria, whilst 26 (15.3%) had sub-nephrotic range proteinuria. The level of microalbuminuria showed significant positive correlations with age (p<0.001)) and the highest aspartate transaminase and alanine transaminase levels (p=0.001) and significant negative correlations with the lowest

platelet (p=0.001) and neutrophil (p=0.047) counts. The mean albumin : creatinine ratio was 177 μg/mg (12.3-886.5). The albumin : creatinine ratio showed statistically significant negative correlations with the lowest platelet (p=0.003) and lowest neutrophil (p=0.004) counts and was significantly higher in females (p=0.039).

In summary, we found a high occurrence of microalbuminuria in our cohort of patients with dengue viral infections. Previous studies have also found a high prevalence of microalbuminuria in dengue viral infections (Tien *et al*, 2013; Vasanwala *et al*, 2014). We extended these findings by studying the associations of microalbuminuria with clinical and biochemical parameters and found a strong correlation of microalbuminuria with elevated liver enzymes, thrombocytopenia, neutropenia, age and sex. In dengue viral infections, besides, a possible direct viral effect on the glomerular basement membrane, a variety of pro-inflammatory mediators such as cytokines may act on endothelial cells causing their dysfunction and hence increased vascular permeability. Further larger studies are needed to characterize the short and long term renal effects of dengue viral infections and their influence on overall disease outcomes.

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