Abstract No: 177 ***Life Sciences***

RISK FACTORS OF DENGUE HEMORRHAGIC FEVER AMONG ADULT DENGUE PATIENTS IN THE WESTERN PROVINCE OF SRI LANKA: A CASE-CONTROL STUDY

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Dengue infection has spread rapidly within countries and across regions in the past few decades, resulting in an increased frequency of epidemics. Infection with any of the dengue virus (DENV) serotypes may result in a broad spectrum of clinical symptoms ranging from a mild flu-like syndrome, dengue fever (DF), to the most severe forms of the disease, dengue hemorrhagic fever (DHF), with coagulopathy and permeability. The signs and symptoms of DHF usually arise late in the disease course when the fever has subsided, making it difficult to predict. Hence, identifying risk factors that accurately predict progress to DHF would significantly contribute to implementing proper intervention and treatment strategies for those at greater risk. This case-control study included 136 adult DHF patients (18 years and above) as cases and 136 DF patients (18 years and above) as controls from four leading hospitals of the Western Province in 2022 to identify the independent risk factors of DHF among adult dengue patients. Participants were recruited for the study by applying consecutive sampling techniques, and independent risk factors under the categories of socio-demographic, clinical and serological were assessed using a questionnaire survey with informed consent. Chi-square and binary logistic regression were performed to identify potential risk factors. Though 20 factors were significant in the bivariate analysis, when the logistic regression was performed to adjust the confounding effect, only six independent predictors showed significant associations with the DHF patients compared to DF patients: Demographic factors such as belonging to other ethnic groups (Tamils, Muslims, Burghers) compared to Sinhalese (aOR = 0.143, 95% CI: 0.043 – 0.470), clinical manifestations; such as abdominal pain (aOR = 3.172, 95% CI: 1.381– 7.285), altered consciousness/ confused state (aOR=8.395, 95% CI: 1.527 - 46.161), systolic blood pressure on admission (aOR=1.014, 95% CI: 1.002-1.027), right hypochondrial tenderness (aOR= 10.839, 95%CI: 3.063 - 38.347), and laboratory characteristics; serum creatinine on admission (aOR= 1.028, 95%CI: 1.018 - 1.038) were identified as significant risk factors of progression of DHF of adult patients ($p<0.05$). Collectively, the results of this study strengthen the understanding of the risk factors of DHF adult patients of the Western Province in Sri Lanka that could be identified from the patient's clinical parameters and by results of low-cost routine laboratory investigations.

Keywords: A case-control study, Dengue, Hemorrhagic fever, Risk factor, Sri Lanka