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*Letter to the Editor*

# Dengue Fever in Bangladesh

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**Dear Editor**

Dengue viruses (DENV), arthropod-borne flavi virues cause acute systemic infection in tropical and sub-tropical regions.[1-3] In most of the cases with dengue virus infection remain asymptomatic; however, it can cause a wide spectrum of clinical manifestations from mild febrile illness with spontaneous recovery to hemorrhagic dengue fever (DF) and/or dengue shock syndrome (DSS).[4] The global burden of dengue is dynamic, estimated 50 million new cases per year across approximately 100 countries.[4] Increased intensity of transmission with severity of disease in endemic regions and concurrent transmission of disease in areas where it has not been observed before indicates global situation with dengue infection continues to worsen with expansion of affected areas and circulation of one or more dengue serotypes.[5] International travelling and trading, unplanned urbanization, abundance of vector breeding place, suitable climatic condition for vector breeding and virus transmission as well as inefficient vector control strategies are considered as determinants of current dengue situation in the world.[6-8]There are four serotypes of dengue virus (DEN1-4) with 25% to 40% heterogeneity. Infection with one serotype confers lifelong immunity against that particular serotype but subsequent infection by another serotype often creates fatal outcomes if remains untreated. However viral virulence and host factors are also major contributing factors. Both innate and adaptive immunity contribute in severe outcome of dengue infection. Intense immune activation particularly during secondary infection leads to an exaggerated cytokine response, activation of complement as well as cell-mediated immune response all together results in changes in vascular permeability and hemorrhagic manifestation, generally referred to as antibody dependent enhancement.[9-10]

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Though dengue virus infection was first reported from Bangladesh in the year of 1964 followed by sporadic cases in succeeding few years, major epidemic of dengue fever and dengue hemorrhagic fever took place in 2000, where four serotypes with DEN3 predominance was evident and DEN3 remained in the circulation till 2002.[11-14]As the Institute of Epidemiology Disease Control and Research (IEDCR) under Ministry of Health and Family welfare is an authorised institute for disease outbreak investigation and disease surveillance, takes the responsibility to monitor dengue situation in Bangladesh through surveillance and wed-based reporting. According to the findings of "mitigating the impact of climate change to reduce the burden of climate- sensitive illness through strengthening of health systems, collaborative networking and enhanced disease surveillance" conducted by IEDCR, DEN1 and DEN2 serotypes were the predominant variants in the circulation and there was no existence of DEN3 and DEN4 till 2016.[14]Reemergence of DEN3 started in 2017 and suddenly raised in 2018withpersistence of same trend or even with more intensity and more fatality in 2019 (unpublished).[16]

Laboratory methods for diagnosis dengue virus infection include detection of dengue virus, viral antigen (NS1), viral nucleic acid and antibodies (IgM & IgG). But these biomarkers appear in different time period of the disease for instance NS1 remains positive up to six days of onset of fever. Similarly detection of viral nucleic acidand viral culture can be possible within five days of fever. Antibody (IgM) appears in blood after five days of fever and antibody IgG is generally detectable at low titer at the end of first week and remains at detectable level for months or even lifelong. But in case of secondary dengue infection IgG is detectable at acute stage of infection and the titer is higher than IgM.[4] In Bangladesh commercially available rapid diagnostic kit for screening of NS1 is with low sensitivity and only detectable within three days of fever according to our experience. Sensitivity of commercially available diagnostic kit for IgM and IgG is also comparatively low. In that case only reliable test is viral nucleic acid detection by real time PCR which is costly and accessible in limited health care facilities. Thus laboratory confirm dengue infection is the tip of iceberg. Considering the reality

more emphasis should be given on clinical assessment and relevant laboratory investigations.

Virus specific treatment is not yet available, so early recognition of warning signs of DHF or DSS and immediate intervention with supportive treatment with close monitoring are of utmost importance to reduce case fatality rate.[17] In Bangladesh, National Guideline for Clinical Management of Dengue Syndrome has been developed and is being followed in dengue case management at all level of health care facilities. So, training on dengue guideline for health care professional including doctors and nurses throughout the year specially prior to dengue season may contribute in better management of dengue cases.

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