

Changing Pattern of Dengue and Severe Dengue in Bangladesh : A New Challenge for Treatment

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The incidence of dengue has grown dramatically around the world in recent decades, with cases reported to WHO increased from 505 430 cases in 2000 to 5.2 million in 2019. A vast majority of cases are asymptomatic or mild and self-managed, and hence the actual numbers of dengue cases are under-reported. Many cases are also misdiagnosed as other febrile illnesses.¹ In Bangladesh there is a largest outbreak of dengue this year 2023, total no cases 317956 and total no death 1667 (Up to 12th November, 2023) among highest no of cases and death recorded since 2000 when first outbreak occurred.² The endemic regions of tropical and subtropical countries (South East Asia and South Asia) account for 70% of the dengue burden.³ Recent changes in behavior of mosquito shows both day and night time bite, grows in both clean and dirty waters, sifting of peak seasonal variation, urban and rural area equally affected and work places bites increases more that explain males are more affected.⁴ Factors associated with severity of disease resulting from DENV infections are extreme of age, previous dengue infection, pre-existing intermediate titre of anti DENV antibody, DENV serotypes, magnitude of viraemia, comorbidities, pregnancy, nutritional status, host genetics and race, quality of clinical care and immunocompromised host.⁵ Recent outbreak shows fever manifesting not like classical dengue fever, paucity of rashes and hemorrhages, surprising rapidity to progression of shock syndrome, frequently manifested by hepatic decompensation (High AST, ALT, PT), presenting with pulmonary manifestations (? pulmonary hemorrhage or ARDS) acute diarrhea, vomiting, refractory shock, multi-organ dysfunction like

myocarditis, pancreatitis, AKI, encephalitis, metabolic acidosis and NS1 negative dengue cases.⁶

Severe dengue is characterized by endothelial dysfunction that causes vascular permeability and plasma leakage. Clinical features of DSS include significant plasma leakage leading to shock, fluid accumulation in the pleural and abdominal regions, increased tendency for bleeding and organ failure which may start earliest 3rd day of fever up to 7 days. The cornerstone of DSS management lies in early recognition and vigilant monitoring. Swift identification of warning signs, often guided by clinical criteria such as the WHO dengue classification, is crucial to initiate timely interventions.⁶ Particularly in endemic areas or during dengue epidemics, healthcare professionals must keep a high index of suspicion. Close observation of vital signs, fluid balance, laboratory results and clinical condition enables early identification of imminent shock and directs treatment choices.⁷ Hematocrit value, platelet count, liver enzyme and coagulation profile monitoring regularly aid in understanding the changing pathophysiology of DSS and guide therapy modification.

Detection of plasma leakage in early stage is crucial to prevent refractory dengue shock syndrome. Balanced crystalloid fluid therapy is the mainstay of treatment starting from low volume to high volume therapy according to shock stage. Intermittent bolus colloid therapy may be needed if inadequate response to crystalloid, platelet transfusion has very limited role except when platelet count 10000/cumm 3/l or less with severe bleeding manifestations. Blood transfusion is indicated when severe internal hemorrhage with falling HCT level. DSS is persist only for 36h to 48 hours after which patient goes to recovery phase. Expanded dengue syndrome either single or multiple organ involved should be managed accordingly in HDU or ICU. The multi-organ involvement in dengue shock syndrome

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Submitted on □□15.11.2023

Accepted on □□26.11.2023

necessitates a comprehensive and multidisciplinary approach to patient care. Severe dengue can result in death and causes of death includes unrecognized dengue without appropriate medical management, unrecognized or prolonged shock, unrecognized occult hemorrhage, fluid overload, nosocomial infections and multi organ failure.

The resource-limited healthcare system of the country is expected to be profoundly impacted by the spread of dengue infection to non-endemic districts areas. Severe dengue patients require good supportive care, while more serious patients require Intensive Care Unit (ICU) assistance. The tertiary healthcare system necessary for treating severe dengue cases is mostly centered in major cities, particularly Dhaka.⁹ Along with poor accessibility of ICU facilities at the district level, there are also resource constrain for serological lab tests/ lab facilities. Therefore, a district-level healthcare facility is not well-equipped to tackle severe dengue outbreaks in most non-endemic regions of Bangladesh. As a backdrop, the existing poor healthcare system could be collapsed if dengue outbreaks are widespread across the country or coincide with other viral disease outbreaks, such as the COVID-19 pandemic.

At present the main aim to control or prevent the transmission of dengue virus and is to combat the mosquito vectors. This is achieved through preventing mosquito breeding, personal protection of from mosquito bites, community engagement and active mosquito and virus surveillance. Dengue has high mortality and high morbidity rates with limited treatment options available, dengue vaccine may play a preventive role in secondary dengue infection in 9-45 years age and high risk group populations

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