Risk factors for mortality in dengue

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Like many other tropical and subtropical countries, dengue has become established as an endemic disease in Bangladesh over the previous two decades.[1] Though sporadic cases of dengue are detected throughout the year in Bangladesh, most of the infections occur in later months of the years, specially, between July and November.[2] In recent years, dengue has contributed to lots of morbidities and claimed many deaths in Bangladesh. According to a press release of the Health Emergency Operation Center and Control Room, Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh, in 2022, a total of 62,382 hospitalized cases and 281 deaths have been recorded.[3] In 2023, the number of cases started rising earlier (around the last week of April) compared to previous years and as of August 27, 2023, a total of 1,19,133 cases and 569 deaths have been reported from all the 64 districts of the country.[4]

Dengue poses a wide spectrum of clinical manifestations; they may pass asymptomatic or may develop symptoms. Classical dengue, dengue hemorrhagic fever, dengue shock syndrome (DSS) and expanded dengue are descriptions of clinical syndrome.[5-7] One meta-analysis reported, primary infection by dengue virus serotype 3 (DENV-3) from South-East Asia (SEA) region have severe disease and secondary infections by DENV-2, DENV-3 and DENV-4 cause severe features.[8] Secondary infection by each serotype shows greater percentage of severe cases than the respective primary infection and this observation strengthens the evidence that antibody-dependent enhancement occurs during secondary infection, which causes more severe disease.[8]

Besides the serotypes and numbers of infection by dengue virus, many host factors and comorbidities contribute to the morbidity and mortality in dengue. A systematic review and meta-analysis reported diabetes mellitus (DM), altered mental status, DSS, higher pulse rate and severe hepatitis as risk factor for mortality in dengue.[9] One report from Bangladesh found that death occurred mostly due to complications of the disease and within 24 hours of hospitalization, indicating late presentation to medical care.[10] Age (>40 years), presence of DM and hypertension, altered sensorium, abnormal reflexes and edema were reported as risk factors for mortality in a report from Kerala, India.[11] In a report (using National Registry in Malaysia), factors associated with dengue mortality were increasing age, persistent vomiting, bleeding and severe plasma leakage.[12] Extremes of age (<10 years and >60 years), patients having DM, hypertension, chronic kidney disease and pregnancy were identified as risk factors for mortality in a report from Mexico[13], while another paper reported age (≥46 years), severe dengue and comorbidities like pulmonary diseases, ischemic heart disease and renal failure were associated with increased in-hospital mortality among patients of Mexico, Brazil and Columbia.[14]

Though, public health measures need to be strengthened to reduce infection transmission, clinicians should be aware of the warning signs[15] in patients with dengue (abdominal pain and tenderness, persistent vomiting and/or diarrhea, clinical fluid accumulation, mucosal bleeding, lethargy, restlessness, hepatomegaly, increasing hematocrit and rapid decrease of platelet counts) and these patients will require in-hospital monitoring and treatment. Patients with severe dengue[15]

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(severe plasma leakage, severe bleeding, severe organ involvement and metabolic and electrolyte abnormalities) should receive tertiary level care.

In conclusion, dengue patients with extremes of age, having comorbidities like DM, hypertension, ischemic heart disease, chronic kidney disease, respiratory diseases, pregnancy, those having warning signs and features of severe disease and those presenting late should have proper attention to optimize treatment and prevent adverse outcomes.

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