Correspondence

Resurfacing dengue cases among the Rohingya refugees in Bangladesh amid COVID-19 pandemic: A SouthEast Asia healthcare concern

Dear Editor,

Having experienced recurrent outbreaks, Dengue has been endemic in Bangladesh. Rohingya refugee camps in Cox’s Bazaar of Bangladesh experienced a surge in dengue cases in January 2022 which immensely increased from May 2022 [1]. As of 24 July 2022, a total of 7687 cases and six deaths were confirmed [1] through rapid diagnostic test (RDT). 0.08% fatality rate (CFR) was reported particularly from Ukhiya Upazila and Teknaf Upazila sub-districts. It is noteworthy that similar surge is not reported from any nearby locality outside the Rohingya refugee camps, nor at the national level. The same locality previously experienced similar outbreak before the acute outbreak in which 1530 cases and three deaths were reported during October to December 2021 [1]. As per the data, 67% cases were in ≥15-year age group and 60% of the cases were males. This puts the contiguous population at a higher risk for severe disease and secondary infection as dengue recurs [1]. The cases still remain high although a declining trend was observed recently.

Approximately 900,000 Rohingya nationals are staying in informal makeshift camps in Cox’s Bazaar district, marked by inadequate access to potable water or quality sanitation and challenging living conditions with strained healthcare services [1]. There has been high level of acute malnutrition in children of less than five years of age. Persistent transmission of acute diarrhoea, recurrent cholera epidemics, persistent diphtheria transmission, and occasional upsurges of measles, varicella and skin infections may pose additional challenges. DENV can potentially cause high morbidity and mortality. Hospital capacity in Bangladesh is limited and are burdened with people affected by COVID-19. Increasing hospitalised severe DENV cases may pose considerable challenges in healthcare management amid the ongoing COVID-19 pandemic. Without adequate treatment, people may be at greater risk of secondary infection which may lead to serious complications. The key challenges experienced during earlier dengue upsurge in the district may help mitigate the outbreak. Cox’s Bazaar is close to Chattogram seaport, which also has a domestic airport, and receives large number of local and international tourists. It may increase the possibility of the spread. Further, due to porous border it is a serious concern for the neighbouring nations. The involvement of international agencies and developed countries is emergent and urgent. As per the update, the WHO does not recommend travel or trade restrictions to Bangladesh [1].

Dengue is a viral infection transmitted to humans through the bite of infected Aedes aegypti and A. albopictus mosquitoes. Endemic to the tropical and sub-tropical regions, it is a neglected disease. Dengue virus (DENV) has four serotypes (1, 2, 3 and 4). Infection with a serotype may cause immunity to the homologous serotype but not others, and a person may progressively be infected by each serotype. DENV infection presents fever, rash, myalgia, headache, digestive and respiratory disorders, and affects all the age groups. It was heartening that majority (81%) of the cases were haemodynamically stable with no severe symptoms. Roughly 15% cases were mild and required primary healthcare while 0.3% cases showed severe signs of dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS). About 1% hospitalised patients required blood transfusion. Serotyping identified the recent strains as DENV-3 (5 samples) and DENV-2 (3 samples) [1]. Recent dengue cases in the Rohingya refugee camps are significantly high compared to past four consecutive years; 2018 (4 cases), 2019 (7 cases), 2020 (3 cases) and 2021 (1530 cases and 3 deaths) [1]. The cases were within the acceptable endemic levels with 121 reports in the larger Cox’s Bazaar district from January till June 2022. As per WHO, although occasional cases are reported in individuals returning from an area with active dengue transmission, no concrete evidence exists hinting at the import of DENV to Bangladesh.

Dengue infections are mostly mild and nearly 80% of cases are asymptomatic. However, it may cause an acute flu-like illness. A patient may exhibit petechial rash and bleeding (dengue haemorrhagic syndrome) from eye, gums and nail-base, depending on the severity of infection and thrombocytopenia extent [2,3]. Dengue may be associated with gastrointestinal bleeding, haematuria (blood in urine), epistaxis (bleeding nose), gingival bleeding (bleeding gums), and menorrhagia (heavy menstrual bleeding) [4]. If left untreated, it may lead to critical cases of Dengue Hemorrhagic fever (DHF) with catastrophic plasma loss leading to shock (Dengue Shock Syndrome; DSS). Haemorrhagic shock (DHS) is characterised by weak and rapid pulse rate with low pulse pressure (<20 mm of Hg), restlessness, cold and clammy skin. Such patient may rapidly recover with volume replacement therapy or may die in 12–24 hrs [5]. Another complication frequently encountered is severe liver disease seen as jaundice, metabolic encephalopathy anahiliathic cholecytitis with considerable changes in liver function [6]. Additionally, the encountered complicated cardiac dysfunctions include T-wave inversion, supraventricular bradycardia and tachycardia [7]. Linked to high fatality rates, acute renal failure in 3% of patients that experience shock is reported [8]. Aplastic anaemia, severe thrombocytopenia, rash, hemophagocytic syndrome, respiratory issues, cholecystitis, pancreatitis and acute abdominal pain are other complications [8]. Neurological complications include meningitis, encephalitis (encephalopathy), cerebellitis, myelitis and acute disseminated encephalomyelitis. 4% of patients confirmed neuromuscular problems like myalgia, rhabdomyolysis, myositis and hypokalemic paralysis [9].

With recurring infections, people will be at a risk of severe dengue. Although there is no specific treatment, identification of cases in time, and appropriate disease management may reduce fatality rates. An increasing trend of DENV infection, especially among the endemic regions Bangladesh, India and Pakistan may be due to ineffective vector control.
(Aedes mosquito) control strategy, deforestation, dense population, and increased and unplanned urbanisation. The severity of the infection may be in part attributed to the low seroprevalence in the population as in Taiwan [10]. Such scenario might be due to the prevailing various serotypes and their antigenic variability that necessitates studies for confirmation.

Being endemic in certain regions and sporadic transmission elsewhere including the USA and the Europe, dengue epidemiology seems to be really complex as evidenced through recent observation of neurological complications and oral lesions because of infection [3]. Inmate immune responses to DENV infection are ill-understood. Despite millions of deaths due to DENV infection, currently there is no therapeutic agent to treat DENV infection. Numerous vaccines (live attenuated, subunit, inactivated, DNA-based and viral-vector based) are at various development stages [11,12]. Understanding the mechanism of the virus in evading immune responses well may pave the way for developing therapeutic agents and vaccines [13].

DENV infection is diagnosed by detecting the virus specific non-structural antigens, and IgG and IgM antibodies. Confirmatory tests like the PCR are necessitated due to cross reactivity of the antibodies and antigens with other arboviral diseases. The numerous prevailing DENV serotypes, lack of appropriate animal models, low pathophysiology understandings, and antibody-dependent enhancement (ADE) are few factors that make developing successful vaccines difficult [11,12]. Due to increased urbanisation, industrialisation and climate change, DENV is projected as a disease of future concern.

Establishing technical partnerships of multi-sector coordination groups for entomological surveys of disease-causing mosquito vectors within and around the camp areas is important. It is also necessary to provide timely situational updates with effective disease surveillance and counsel for appropriate response by visiting outbreak epicentre. Healthcare professionals should follow dengue treatment WHO protocol to guide and manage dengue cases. PCR testing and serotyping positive dengue cases from different healthcare facilities is also highly recommended. The Cox’s Bazaar Medical College laboratory has no dengue virus serotyping facility [1]. Required number of RDT kits should be available to ensure timely diagnosis of the cases. Keeping isolation and observation beds for moderate and mild DENV cases to manage and cope with the surge are suggested. Hospitals and healthcare personals need to be vigilant in managing severe DENV cases [1]. Keeping in mind the inadequate access to potable water or quality sanitation and challenging living conditions, water, sanitation, hygiene, environment management and risk communication must be intensely taken care in the affected camps [1]. Vector control activities should be beefed up in areas where there is a human-vector contact risk. Integrated Vector Management (IVM) strategy to control mosquito vectors, remove potential breeding sites, and to minimise individual exposure may be promoted. Indoor space spraying (fogging) is another approach which may be challenging in densely populated areas. Larvicidal measures and more impactful strategies in breaking the transmission may also be useful. DENV is not human-to-human transmissible although Aedes mosquito may infect after biting a dengue-infected individual, which may increase the possibility of transmission cycle capable of spreading DENV [1]. Personal protection measure (long dress) during outdoor activities is recommended. For indoor protection, mosquito coils or household insecticide aerosol products is suggested. Door and window screens may reduce the chance of mosquito entering the house. Insecticide-treated nets for window offers good protection. A disease of primarily the lower economic group, it has remained neglected for long as the global research and development in medical sciences targeted at it are qualitatively and quantitatively quite low. Thus, there is an urgent need to have concerted efforts to contain such neglected endemic and sporadic ailments before these reach out of control sooner or later.

Ethical approval

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