

Risks of Simultaneous Co-Infection of Dengue and COVID-19 in Bangladesh: Challenges and Recommendations

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Abstract

The current global COVID-19 pandemic is compounding on populations susceptible to tropical illnesses like dengue in different developing countries like Bangladesh. The growing concern is that Bangladesh is a dengue-endemic zone and the peak transmission occurs in the monsoon season (June to October). In the most recent monsoon, a total of 354 dengue cases have been confirmed until 27th July 2020, data-driven from only 41 hospitals alone. A fifty-three-year-old male patient was found to be co-infected with COVID-19 and dengue fever. Concerns arise as hospitals are increasingly denying to admit the patients. Moreover, reports of the false-positive results in dengue screening tests recorded in different countries further exacerbate the issue. These conditions could postpone the early diagnosis of COVID-19 cases and aggravate the situation. In addition, the overwhelming wave of the dengue cases would be a challenge for the vulnerable health care system of the country which is already under strain due to the COVID-19 pandemic. Failure to establish and implement proper policies might lead to the dengue outbreak with the burdens of the concurrent COVID pandemic, resulting in the collapse of the health and social system, as well as the economic growth of the country.

Keywords: challenges, coinfection, COVID-19, dengue fever, co-epidemic, health care facility.

Introduction

Like the rest of the world, Bangladesh has also been struggling to tackle the spread of the disease COVID-19, which emerged due to a novel coronavirus (SARS-CoV-2). Since the declaration of the first 3 COVID-19 confirmed cases on 8th March, the COVID-19 curve has been increasing in Bangladesh. To date (7th September 2020), a total of 325,157 confirmed cases with 4,479 deaths of people have been recorded [1]. Amidst this COVID-19 crisis, the monsoon has already arrived as Bangladesh has a subtropical climate with a rainy monsoon season. The heavy rain in this period causes a sudden spike in the Aedes mosquito population, which is the vector of dengue fever. Last year, the country has witnessed the worst dengue fever outbreak, with 101,354 infection and more than 276 deaths since the time of the first major outbreak in 2000, according to data made available by the Directorate General of Health Services [2].

As precautionary measures for the COVID-19 pandemic, people are recommended to stay indoors by healthcare professionals, and a countrywide lockdown is being attempted. This condition creates a higher risk of dengue infection in residential areas as Aedes mosquitoes are capable of breeding in households and feed mostly during the day time. The Dhaka North City Corporation found that over 60 percent of houses in the Dhaka city were potential Aedes breeding grounds, and the National Malaria Elimination and ATD Control Programme found larvae in 13.62 percent of the houses [3]. Up until July 2020, a total of 354 cases of dengue have been reported. The number of unreported dengue patients is expected to be high as the government collects patients' information from only 41 hospitals out of over 3000 [3]. It indicates the imminent crisis of an overwhelming wave of dengue patients who will emerge during or after this monsoon season. Other south-east Asian countries are also grappling with a rise in dengue cases. The national environment agency of Singapore reported 7,502 dengue fever cases until May 15, 2020, which was almost twice the number of cases found during the same period of 2019. India, Pakistan, Indonesia, Thailand, and Malaysia also confirmed the rapid increase of dengue patients in different susceptible zones of the respective countries [4].

An Insight into the Challenges

Recent studies have provided evidence that dengue and COVID-19 have shared clinical and laboratory features that cause difficulty in early diagnosis and distinguishment among the patients (Yan et al., 2018; [5]. The onset of both diseases is manifested with fever. In the case of dengue, it causes a sudden development of high fever. On the other hand, COVID-19 cases showed mild fever with respiratory illnesses like cough or shortness of breath. Respiratory distress is also found in severe dengue cases. Nausea, vomiting, abdominal pain and headache are some of the overlapping symptoms in both of these illnesses [6]. A fifty-three-year-old male patient having fever, cough, muscle pain, and breathing complications was the first person to be recognized as positive for both coronavirus and dengue fever in Bangladesh [7]. One classical sign of dengue is skin rashes (petechiae), but a COVID-19 patient in Thailand who had skin rashes early on was misdiagnosed as having dengue [8]. A patient found in the Reunion Island, a French overseas department located in the Indian Ocean, was confirmed as a case of dengue and COVID-19 co-infection. The patient had rashes, arthromyalgia, and dyspnea with polypnea, which are common physical signs and diagnostic criteria similar to both diseases' dengue and COVID-19 [9]. Another study in Pakistan found positive results for both the dengue serological test and the COVID-19 RT-PCR test in at least 5 patients (3 male and 2 female) [10]. In Indonesia as well, a patient who passed away was found to be both dengue serological test positive and RT-PCR positive for COVID-19 [11]. Both diseases lead to multi-organ involvement and shock at the later stage. Furthermore, false positives result in dengue screening tests that could hamper the diagnosis of COVID-19 infection and facilitate the further spread of the virus [12]. Moreover, due to COVID-19 pandemic, many hospitals cannot provide regular health care services. Many patients have even been denied admission without a COVID-19 test report, and the government health department also postponed different routine health programs like surveillance and vaccination. These interruptions in the healthcare system lead to the delay and/or misdiagnosis as well as hindrances in the treatment of dengue. Residents might also be unaware of the progress of another disease until the complications become serious as they are in stress and fear of the ongoing COVID-19 infection. As a result, the epidemic of dengue this year might present huge challenges to the already stressed health care facilities of the country.

Recommendations

It is high time for the implementation of effective strategies to contain the growing public health threats caused by the dengue epidemic and the COVID-19 pandemic. The healthcare workers should undertake precautionary measures for themselves and be made aware of the complexity created by dengue fever and COVID-19. There must be strict infection prevention and control measures from primary to tertiary health care levels to ensure sufficient clinical care to dengue cases in this pandemic situation. The circulation of proper guidelines from the regulatory body to primary healthcare units might assist the early differentiation of both cases as well as reduce severe consequences. Any warning signs like mucosal bleeding, abdominal pain, vomiting, fluid accumulation, and sluggish activities should be given the highest priority in terms of management. In each of the affected localities, efforts must be taken for differential diagnosis in laboratory diagnostic set up. Required medicines, equipment, and testing facilities should also be provided to marginal health care units for strengthening the healthcare system to prepare for the overwhelming cases of dengue fever within the ongoing burden of COVID-19 patients. Immediate development of dengue monitoring cells through the active participation of health departments and city authorities for case management and vector control programs, especially in big cities, is crucial. Household mosquito breeding sources should be eliminated considering how the public is requested to stay indoors for a prolonged period. The regular delivery of health alerts using social media, in combination with traditional media, could enhance the mass engagement of the residents to eliminate or control the mosquito breeding sites, as well as prevent the spread of rumors and encourage early reporting of new cases. Future directions could include comprehensive research that explores the potential of co-infection between coronavirus and arbovirus.

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