COVID-19 and Dengue Co-infection: A Panic in Pandemic

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Corona virus disease 2019 (COVID-19) is a serious respiratory illness caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). After the first identification at Wuhan, Hubei Province, China in December 2019, number of SARS-CoV-2 cases increased across China and eventually spread to the whole world, leading to the declaration of a pandemic. As of 29 August 2021, there were 21,57,14,824 cases and 44,90,753 deaths globally across 200 countries.[1] Similar to the rest of the world, Bangladesh has also been struggling to tackle the spread of Corona virus Disease 2019 (COVID-19), since the declaration of the first three COVID-19 confirmed cases on March 8, 2020, the COVID-19 curve has been increasing in Bangladesh. Till 29 August 2021, a total of 14,93,537 confirmed cases with 26,015 deaths have been recorded.[2]

During this pandemic, dengue cases increased in many countries. Consequently, patients with SARS-CoV-2 and dengue co-infection has been reported recently in several countries like Singapore, Thailand, India, and Bangladesh. Currently, multiple countries in South America like Brazil, Paraguay, Colombia, Argentina, Bolivia are suffering seriously from co epidemics of dengue and Covid-19.[3] Amidst this COVID-19 crisis, the monsoon has already arrived at Bangladesh causing a sudden spike in the Aedes mosquito population, which is the vector of dengue fever. In 2019, the country witnessed the worst dengue fever outbreak, with 1,01,354 infection cases and more than 276 deaths since the time of the first major outbreak in 2000.[4] Till 30 August 2021, total 10,411 new dengue cases were hospitalized throughout the country and among them 54 patients died.[5]

Dengue is the most common arboviral infection presents with a wide range of signs and symptoms including fever, headache, arthromyalgia, retro-orbital pain and rash. Approximately 1 in 20 of those patients develop severe dengue, characterized by plasma leakage, severe bleeding and severe organ impairment.[6] Severe dengue is the leading cause of hospitalization and the number one killer among mosquito-borne diseases in the South-East Asia (SEA) region.[7,8] Every year, an estimated 96 million dengue infections are reported with 21,000 deaths worldwide.[6] In the last 50 years, the global incidence of dengue has increased 30-fold.[9] COVID-19 and dengue co-infection was associated with severe disease and fatal outcomes.[6]

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.[10,11] The onset of both diseases is manifested with fever. In the case of dengue, it causes a sudden development of high fever and severe bone pain. By contrast, COVID-19 cases show mild fever with respiratory illnesses such as cough or shortness of breath and ageusia.[3] Respiratory distress is also found in severe dengue cases.[3] Nausea, vomiting, abdominal pain, headache and skin rash are some of the overlapping symptoms in both illnesses.[12] Both diseases lead to multiorgan involvement and shock at the later stage.[6]

Despite similarities in signs and symptoms (like fever, headache and body pain),and laboratory characteristics (like thrombocytopenia and leucopenia) of these two diseases, the management of these diseases are completely different.[6] Confection of SARS-CoV-2 and dengue poses another challenge for accurate diagnosis and treatment of these viral diseases.

Further complications have been raised when SARS-CoV-2 infection gave false-positive results for dengue in the rapid serological tests and facilitate further spread of the virus.[13] Pre-existing dengue-antibodies also have the potential to affect the results of COVID-19 serology tests through

cross-reactivity.[14] Misdiagnosis of Covid-19 as dengue with failure to isolate such patients resulting in a delay in diagnosis of SARS-CoV-2 infection and further spread of the virus.[13] Therefore, confirmative diagnostic tests are necessary for accurate and timely diagnosis and patient management.[6]

Moreover, owing to the COVID-19 pandemic, many hospitals are unable to provide regular healthcare services. 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 healthcare facilities of the country.[15]

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. 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 healthcare levels and proper guidelines from the regulatory body to ensure sufficient clinical care to dengue cases in this pandemic situation. In each of the affected localities, efforts must be taken for differential diagnosis in laboratory diagnostic set up as the clinic epidemiological features are not sufficient to differentiate the confection of COVID-19 and dengue fever.[16] Required medicines, equipment, and testing facilities should also be provided to marginal healthcare units for strengthening the healthcare system to prepare for the overwhelming cases of dengue fever within the ongoing burden of COVID-19 patients.[17] The regular delivery of health alerts using social media, in combination with traditional media, are needed to eliminate or control mosquito breeding sites, prevent the spread of rumors and encourage early reporting of new cases.[15]

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