Case Report

Possible re-infection of SARS-CoV-2 complicated by dengue virus co-infection: report of a rare case from Bangladesh

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ABSTRACT

Re-infection by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and co-infection by dengue virus and SARS-CoV-2 are possible. We report a case of dengue haemorrhagic fever, occurring in a young Bangladeshi man, who concurrently tested positive for SARS-CoV-2 infection by reverse transcriptase polymerase chain reaction (RT-PCR). Four months previously, he suffered a mild form of corona virus disease 2019 (COVID-19). This case is reported to make the physicians aware that, co-infections are possible in this COVID-19 pandemic, specially in dengue endemic regions and countries like Bangladesh.

Key words: *COVID-19, dengue haemorrhagic fever, re-infection, RT-PCR positivity.*

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INTRODUCTION

Starting from Wuhan, China in late 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has rapidly spread all over the world and claimed huge morbidity and mortality. These are not only due to corona virus disease 2019 (COVID-19) itself but also from other diseases including concurrent infections. In tropics and sub-tropical countries, dengue outbreaks are common during the monsoon. Initial clinical and laboratory features are indistinguishable for dengue and COVID-19.[1] Here, we present a case of dengue haemorrhagic fever, occurring in a young Bangladeshi male patient, who also tested positive for SARS-CoV-2 during the same febrile illness by reverse-transcriptase polymerase chain reaction (RT-PCR), four months after his first clinical event of COVID-19.

CASE REPORT

A 34-year-old Bangladeshi male patient, with no recent travel history, presented with a 2-day history of high grade, continued fever, headache, body ache, low back pain and restlessness. He took paracetamol and fexofenadine. Investigation reports revealed a positive natural structural protein 1 (NS1) for dengue virus and RT-PCR for SARS-CoV-2 from nasopharyngeal swabs. His initial platelet count was 1,70,000/cmm of blood. He was started with favipiravir, advised to stay home and monitor oxygen saturation. High resolution computed tomography (HRCT) scan of chest appeared normal. On day 4 of symptom onset, he developed wide spread maculo-papular rash. A repeat blood test revealed low platelet count (42,000/cmm) and he was hospitalized, where subsequently his platelet count further dropped to 28,000/cmm. He remained clinically stable throughout the hospital course; there was no bleeding manifestation, shock or hypoxia. His discharge medications included subcutaneous low molecular weight heparin (started after platelet count had reached over 1,00,000/cmm).

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On June 23, 2020, he first reported with a 3-day history of fever, cough, sore throat and anosmia. That time, he tested positive by RT-PCR for SARS-CoV-2 and was treated at home as mild COVID-19 case, maintaining isolation protocols and took paracetamol, fexofenadine, azithromycin and single dose of ivermectin. He became symptom free in 5 days and tested negative for SARS-CoV-2 after 21 days. He remained in good health throughout the period until October 15, when he again developed febrile illness and subsequently received a diagnosis of dengue haemorrhagic fever and COVID-19.

On follow-up visit, one week after discharge, he was clinically stable and laboratory evaluation revealed positive IgG against dengue virus (15 days after fever onset, IgM and IgG were negative on day 5 after fever onset), improved alanine aminotransferase (151 from 444 U/L) and a normal platelet count and D-dimer level.

DISCUSSION

Antibodies against SARS-CoV-2 are not long lasting and re-infection by SARS-CoV-2 is possible.[2] Cases of co-infection by dengue virus and SARS-CoV-2 are reported from Reunion Island[1] and Brazil.[3] Care should be taken to make a diagnosis of co-infection by dengue virus and SARS-CoV-2 depending up on serology, as false positive dengue serology in COVID-19 cases are reported.[4]

It is now evident that co-infections are possible by dengue virus and SARS-CoV-2. Some authors warn about the worse combination, while others predict some protective role, at least short-lived ones. Important is to treat the patient by supportive measures, with meticulous monitoring for possible organ involvement/failure, protection of caregivers and hospital staffs from SARS-CoV-2 infection.[5,6]

Repeat infections by SARS-CoV-2 are reported. In our clinical practice, clinical manifestation and second time RT-PCR positivity for SARS-CoV-2 after recovery from the first event are documented but we are unable to go for genome sequencing as routine practice. This limits the proof for re-infection in resource constrain settings, as in the present case. It is also suggested that, in absence of clinical features, RT-PCR positivity from nasopharyngeal swabs does not necessarily mean persistent infection, re-infection or infectivity.[7]

As COVID-19 cases are increasing with evidences of second waves in some countries and regions, it will not be surprising to face increasing numbers of re-infection by SARS-CoV-2 and co-infection with dengue virus and SARS-CoV-2. A high index of clinical suspicion is warranted to have a better patient outcome and safety for health care workers.

Authors' contribution: MW diagnosed the case and planned publication. MAR did literature search and drafted the manuscript. Both authors read and approved the final manuscript for publication.

Conflicts of interest: Nothing to declare.

Consent: Informed written consent was obtained from the patient for publication of case report and accompanying images.

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