Dengue and COVID-19 Coinfection- A Double Trouble

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Abstract
COVID 19 since its onset in Wuhan in 2019 has overburdened our existing health resources and infrastructure. Dengue virus has been endemic in Asian countries since decades. Both being viruses with similar clinical profile and overlapping laboratory parameters has posed a great challenge for Asian countries to combat a co epidemic, creating a double burden. We, as clinicians must be more vigilant in diagnosing the patients so that dengue is not missed in this covid pandemic era and does not progress to life threatening dengue shock syndrome. More importantly, we should emphasize on preventive measures for prevention of dengue so that we can reduce the burden on health care system.

Introduction
The world is still facing the challenges of combating the coronavirus since its onset in Wuhan China. The coronavirus is a respiratory illness caused by SARS-CoV2 and manifests a variety of clinical symptoms varying from fever, cough, headache, myalgias, nausea, vomiting to more severe pneumonia, ARDS, septic shock and multiorgan failure. Dengue virus has been endemic for decades in Asian countries. Dengue virus having a similar clinical profile as the COVID 19 has made it even more challenging for the Asian countries to combat a co epidemic, thus creating a double burden. We present a case series where the patients presented with symptomatology consistent with COVID 19 but the investigations prompted us to look for Dengue NS1 antigen. We found it pertinent to bring these cases to light so that dengue is not missed and it does not progress to dengue shock syndrome masquerading as COVID 19.

Case 1
16-year-old male presented with chief complaint of fever associated with headache for 2 days. Associated history of recurrent vomiting’s with pain abdomen was present. The patient tested positive for SARS -Cov 19 by rapid antigen test. The patient was hospitalised the same day. The physical examination revealed temp of 97 F, blood pressure of 134/79, PR 86/min and blood oxygen saturation of 95% at room air. He described pain abdomen, which was diffuse in nature associated with anorexia, nausea, and vomiting. He did not complain of any respiratory complaints or bleeding manifestations. At admission, he had thrombocytopenia (platelet count of 14000) and leukopenia (3800). Liver function tests were abnormal with raised (aspartate aminotransferase 255 U/L and alanine aminotransferase 169 U/L). CRP was normal (5.83 mg/L), serum LDH was raised (1233 IU/L), with raised D dimer levels of 1170.81 ng/ml) and serum ferritin levels (>1200 ng/ml). Dengue serology was positive for NS1 antigen. During hospitalisation, patient was started on symptomatic treatment. Gradually the platelet count improved along with resolution of clinical symptoms and the patient was discharged in a satisfactory condition.

Case 2
30-year-old male with no significant past medical history presented with chief complaint of fever associated with generalised malaise for 3 days. The patient had no history of respiratory complaints. She presented positive for SARS-COV 19 by rapid antigen test and was admitted to the hospital immediately in view of high risk. At presentation, the patient was afebrile with blood pressure of 128/80, PR 96/min and blood oxygen saturation of 97% at ambient room air. Initial investigations revealed thrombocytopenia (platelet count 8000) with normal total leucocyte count (10000). Patient did not have any bleeding manifestations despite severe thrombocytopenia. Liver function tests were abnormal with raised liver enzymes (aspartate aminotransferase 744 U/L and alanine aminotransferase 295 U/L). Further investigations revealed CRP(4.24mg/L), serum LDH (1289 IU/L), D dimer (854.17ng/mL) and serum ferritin (>1200ng/mL).

Case 3
67-year-old female with previous history of hypertension on medication presented with chief complaint of fever associated with generalised malaise for 3 days. The patient had no history of respiratory complaints. She tested positive for COVID-19 with a rapid antigen test and was admitted to the hospital immediately in view of high risk. At presentation, the patient was afebrile with blood pressure of 128/80, PR 96/min and blood oxygen saturation of 97% at room air. Initial investigations revealed thrombocytopenia (platelet count 33000) and leukopenia (7900). Renal function tests revealed serum creatinine of 1.8 with slightly raised liver enzymes (aspartate aminotransferase 63 U/L and alanine aminotransferase 36U/L). CRP was raised (79.4 mg/L), serum LDH was raised (989 IU/L), with raised D dimer levels of 1585.76 ng/ml) and serum ferritin levels (>1200 ng/ml). Dengue serology was positive for NS1 antigen. During hospitalisation, patient was started on symptomatic treatment. Gradually the platelet count improved along with resolution of clinical symptoms and the patient was discharged in a satisfactory condition.

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One of the easiest ways to diagnose either of the disease is through the available rapid tests. Due to the pandemic COVID-19 protocol, the patients were tested for coronavirus initially when they presented to the hospital with complaints of fever. On admission, investigations revealed severe thrombocytopenia and raised liver enzymes. Being an endemic country for dengue with spikes of dengue fever each year, the patients were tested for dengue virus which came out to be positive for NS1 antigen. It has been hypothesized that antigenic similarities between SARS-Cov 2 and dengue virus may result in the false positive results resulting in misdiagnosis of either disease.

**Thrombocytopenia being** characteristic feature of dengue infection has also been observed in COVID-19 patients. Thrombocytopenia is associated with severity of COVID-19. Chen N et al in his study observed thrombocytopenia is more prevalent (12% vs 4%) in COVID-19 patients compared to thrombocytosis. Another study of COVID-19 patients showed 36.2% of them developed thrombocytopenia. In dengue endemic countries, health care workers are facing difficulty trying to distinguish between both the viruses and further managing the diseases with limited sources. More emphasis should be laid on preventive measures for such endemic diseases so that we can effectively control these diseases and further reduce the burden on the health care workers.

**Conclusion**

In dengue endemic countries, health care workers are facing difficulty trying to distinguish between both the viruses and further managing the diseases with limited sources. More emphasis should be laid on preventive measures for such endemic diseases so that we can effectively control these diseases and further reduce the burden on the health care workers.

**References**