

## From the Desk of the Editor

**Understanding Long COVID : Overcoming diagnostic dilemma**

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The ongoing pandemic of Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome Coronavirus-2 (SARS CoV-2), is an acute infectious disease. Starting from Wuhan, China in December 2019, it has spread all over the world causing more than 596,298,561 confirmed cases, and more than 6,457,365 deaths.<sup>1</sup>

Usually improvements in clinical features of COVID occur during the first few weeks after the acute phase. Protracted symptoms following acute infection are common in some viral and bacterial disease. And these may last for several months. According to Centers for Disease Control and Prevention (CDC), some people who have been suffered from symptomatic/asymptomatic COVID-19 and then cured, can experience long-term effects from their infection, known as post-COVID conditions (PCC) or long COVID.<sup>2</sup> It has also been known as long-haul COVID, post-acute COVID-19, post-acute sequelae of SARS CoV-2 infection (PASC), long-term effects of COVID, and chronic COVID. Clinical features of PASC may develop during acute COVID-19, or after the acute phase has resolved. These symptoms must be present for more than 12 weeks of the acute stage and are not explained by alternative diagnosis.<sup>3</sup> Though very recently US National Research Action Plan on Long COVID diagnoses it if symptoms persist for more than 4 weeks after initial infection.<sup>4</sup> It may also occur in children and adolescents.

There are several studies on long COVID in different parts of world. These studies revealed that survivors of COVID-19 may develop commonly fatigue, muscle weakness, myalgia, dyspnoea, cough, anosmia, dysgeusia, insomnia, anxiety, depression, loss of appetite, headache, and loss of memory as long COVID symptoms. Long COVID conditions are actually a wide range of new, returning, or ongoing health problems affecting multi-organs like heart, kidney, lungs, skin and brain. A common term of 'Brain fog' is being used if there are difficulties in focus, memory and word collection. There may be even persistent low immunity, clotting disorders, and inflammation.<sup>5</sup> It can also manifest as new or worsening of chronic health problems. Patients may develop diabetes, heart diseases or neurological conditions. Acute kidney injury (AKI), developed during acute illness of COVID-19, may persist and progress to end stage renal disease. Even, there may be decrease in renal function without AKI at acute phase. Huang et al found 13% of their patients had reduced eGFR during follow up; though their renal function was normal during acute illness.<sup>6</sup> Patients who were critically ill and treated in intensive care unit (ICU), may experience post-intensive care syndrome as PASC. Symptoms of Long COVID may be relapsing and remitting.

Risk factors for developing long COVID has also been studied in the studies analyzing long COVID. Female gender, impaired pulmonary diffusing capacities, abnormal chest imaging during acute stage, severity of COVID-19, smoking, longer recovery period during acute illness, positive rhesus factor in blood group, prior functional limitation etc have been identified as risk factors for developing long COVID symptoms. It has also been seen that people who were severely ill during acute COVID phase, usually develop PASC. Changes in lifestyle due to pandemic also play a significant role.

Nearly 1 million people in UK had some symptoms of long COVID, which equates to 1.5% of the population.<sup>7</sup> Among them, 18.5% had problems in their day-to-day activities. Another retrospective cohort study done in NHS hospitals in England found that individuals who were admitted in hospitals for COVID-19 had increased rate of multiorgan dysfunction compared with the expected risk in general population.<sup>8</sup> An ambidirectional cohort study done in an hospital of Wuhan, China, 76% of the survivors had long COVID symptoms with fatigue or muscle weakness, sleep difficulties, and anxiety or depression being the common symptoms (63%, 26% and 23% respectively).<sup>6</sup> Reports from US government showed that 5% to 30% of people develop PASC after SARS-CoV-2 infection, depending on the estimate. In a cohort study done on 2198 Bangladeshi COVID survivors, prevalence of long COVID symptoms was found 16.1% at 12 weeks with an overall duration period of  $21.8 \pm 5.2$  weeks.<sup>9</sup> This study was done mainly on non-hospitalized people. Mahmud R et al conducted a prospective cohort study in Dhaka Medical College Hospital, a tertiary care Government hospital in capital of Bangladesh.<sup>10</sup> They showed that 46% of the patients who were discharged from hospital, developed post-COVID symptoms. And significantly more patients with severe disease during hospital admission had PASC than others. But they did follow up for only a month which do not meet the defining criteria of long-COVID.

Exact aetiology of long COVID is still not known. Several hypotheses persist including permanent damage to various organs, post-viral syndrome, reinfection with another strain and post-traumatic stress disorder. There is no test to diagnose PASC. Routine blood tests, chest X-ray and ECG are usually normal. Alternative disease should be excluded before making diagnosis of this syndrome. As vaccinated people are less likely to develop severe COVID, so till date, vaccination is the only preventive measure for PASC. Persistent symptoms of Long COVID have created challenges for the healthcare providers. Multidisciplinary team is needed to provide comprehensive treatment approach to PASC patients.

Centers are already being opened in US, UK and other countries where treatment has been provided according to interim guidelines by National Institutes of Health (NIH), or National Institutes for Health and Care Excellence (NICE), or Royal College of General Practitioners (RCGP). In our country, there are post-COVID clinics in Bangabandhu Sheikh Mujib Medical University and few other hospitals.

As the pandemic is still going on with emergence of new mutated SARS CoV-2, further extensive studies on long COVID is needed. Long term follow up of the patients is essential with concomitant rehabilitation services. Long COVID should be treated not only by Clinicians but also by Physical therapists, Speech therapists, Occupational therapists and Behavioral therapists. A well-planned infrastructure in Health Care Delivery system is needed to treat the broad range of persisting and debilitating symptoms of PASC.



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