Editorial

Post COVID Syndrome: An Emerging Threat on Health Care

Post-COVID Syndrome is known as Long COVID, chronic COVID syndrome, long-hauler COVID-19 and can be defined by the National Institute for Health and Care Excellence (NICE) guideline as "signs and symptoms that develop during or after an infection consistent with covid-19 which continue for more than 12 weeks and are not explained by an alternative diagnosis".[1]

Post-COVID syndrome is a pathologic entity which involves persistent physical, medical, and cognitive sequelae following COVID-19, including persistent immunosuppression as well as pulmonary, cardiac, and vascular fibrosis. Pathologic fibrosis of organs and vasculature leads to increased mortality and severely worsened quality of life. The epidemiology of post COVID syndrome has not been well defined because of the unclear medium and long term pathophysiology across organ systems. When post-covid syndrome clinics are established, characterization of the epidemiology of the disease will help with appropriate diagnosis, care, public health interventions and policy, and resource planning.

Post-COVID syndrome has a prevalence of between 10-30% in patients with a recent history of SARS-CoV-2 infection. Patients with severe manifestations of COVID-19 often progress to acute respiratory distress syndrome (ARDS) and require mechanical ventilation. ARDS may cause permanent scarring of the lung tissue, resulting in respiratory problems that persist long after recovery.[2] Between 33 and 75% of patients with COVID-19 require mechanical ventilation, often for weeks at a time,[3] and there are significant short and long-term effects associated with prolonged intubation. Those on ventilators are more prone to respiratory infections, which, in turn, predispose patients to further harm and risk of permanent lung damage. Patients experiencing post intensive care syndrome (PICS) generally report higher incidences of cognitive and physical dysfunction, which often persist long-term.[4] PICS can also lead to disability and moderate or severe pain.[5] Because patients with severe COVID-19 infection frequently require prolonged intensive care unit (ICU) stays,[3] we hypothesize that survivors will be similarly at heightened risk of all these physical and cognitive impairments. This may be further exacerbated by the fact that unlike other patients requiring mechanical ventilation or in the ICU, patients with COVID-19 may not receive the physical and occupational therapy they need to recover due to concerns over spreading the disease or inadequate medical personnel or other resources, resulting in even greater likelihood of persistent functional loss and debility.

COVID-19 infection is also associated with high rates of extra-pulmonary complications that may continue to incur morbidity, disability, and delayed mortality in survivors. These include cardiac injury,[6] acute ischemic or hemorrhagic stroke,[7] neurological deficits,[8] acute kidney injury, including the

need for dialysis, and liver injury.[9] The thromboembolic complications of COVID-19, such as pulmonary embolism, stroke, and other microinfarctions, can cause a wide range of permanent organ damage. Independent of ARDS, severe pneumonia has been associated with increased risk of incident heart disease both in the immediate aftermath of the infection and in later years.[10] It is likely that the risk of heart disease in COVID-19 survivors will be even higher, confounded by high rates of underlying cardiovascular disease, hypertension, and diabetes among patients with severe COVID-19 infection and the independent effects of COVID19 on the cardiovascular system.

Even if patients with COVID-19 recover physically, they are vulnerable to long-lasting mental health problems. Long term psychological distress and post-traumatic stress disorder can develop in more than half of patients who survive critical illness.[11] While there is no long-term data on the psycholoical effects of COVID-19 infection and treatment, an earlier study of patients hospitalized for severe acute respiratory syndrome (SARS) found that more than one-third had moderate to severe depression and anxiety 1 year after physical recovery.[12] The mental health effects of surviving COVID19 may be further compounded by loneliness and isolation, job and economic loss, increased child care and familial responsibilities, and guilt if family members or other contacts contract the virus. Finally, COVID-19 survivors may experience chronic pain, which is commonly reported by ICU survivors,[13] potentially compounding the epidemic of opioid misuse already affecting many of the same vulnerable populations.

During 2020, increasing numbers of case reports, case series, and small observational studies reported long-term complications of corona virus disease 2019 (COVID-19) in patients who had recovered from acute infection with severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). Since May 2020, the Centers for Disease Control and Prevention (CDC) has recorded all reported cases of COVID-19 in USA. In April 2021, the American College of Rheumatology (ACR) revised its clinical guidelines for diagnosing and managing hyperinflammation and chronic multisystem inflammatory syndrome in children (MIS-C). Pulmonary, hematologic, cardiovascular, neuropsychiatric, renal, endocrine, gastrointestinal and hepatobiliary, and dermatologic involvement, and chronic multisystem inflammatory syndrome in children (MIS-C) highlights the requirement for a multidisciplinary approach to the management of patients with long COVID.

Potential long-term effects from post COVID syndrome will assume increasing importance as a surge of treated patients are discharged from the hospital, placing a burden on healthcare systems, patients' families, and society in general to care for these medically devastated COVID-19 survivors. Urgent research is needed to understand the risk factors for post-covid syndrome so that treatment can be targeted better to demographically and clinically at risk populations.

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