



Neuropsychiatric Aspects Of Long Covid

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ABSTRACT

Long COVID is a term used for persistent symptoms after being infected with COVID-19 with an estimated point of onset ranging from 3-12 weeks after infection. The risk factors for the occurrence of Long COVID are influenced by age, gender, comorbidity, ethnicity, and the severity of the acute phase. It is known that central, peripheral, and psychological factors play an important role in chronic fatigue, which is one of the most common symptoms of Long COVID. The most common neuropsychiatric clinical manifestations in Long COVID are sleep disturbances, fatigue, depression, anxiety disorders, decreased cognitive function or decreased concentration, and post-traumatic stress disorder. Therapeutic management for Long COVID cases involves various aspects, such as physical rehabilitation, management of pre-existing comorbidities, mental health support management, and social services.

1. Introduction

At the start COVID-19 pandemic, neuropsychiatry symptoms become one of the prominent features of the coronavirus outbreak. The neuropsychiatry symptoms would range from headache, fatigue, depression, anxiety, and post-traumatic stress in acute COVID-19. However, the persistence level of neuropsychiatry symptoms after the infection is still not yet clear. Long COVID is a term used for persistent symptoms after one is infected with COVID-19, with point onset estimated to range between 3-12 weeks after infection. The National Institute for Health and Clinical Excellence (NICE) conceptualizes Long Covid as persisting symptoms between 4-12 weeks after infection from ongoing symptoms of COVID-19.¹

Recovery after COVID-19 infection is varied between individuals and is not fully understood why some individuals experience persistent symptoms continuously and longer than others. Some use the Post-acute COVID-19 symptoms and post-COVID-19 conditions terms for ongoing symptoms that last more than 4 weeks or a positive diagnosis that last

more than 12 weeks. Adding to the facts, it needs to be understood that COVID-19 can impact a lot of organ systems causing diverse persistent symptoms including fatigue, shortness of breath, cough, loss of smell, loss of taste buds, myalgia, memory problems, and gastrointestinal problems.

A survey of 1002 participants in Bangladesh showed that as many as 20% of patients experience symptoms after COVID-19 infection. Meanwhile, other studies in England found that nearly one million people reported symptoms of long COVID or equivalent with 1.5% of the population, with 18.5% complaints that their daily activities are disturbed.² Other studies in Brazil declared that long COVID influences mental health and quality of life, where it is found that the prevalence of depression is 40%, anxiety is 52%, and sleep problems are 43%.³ This literature review wished to briefly discuss the neuropsychiatry aspects related to long COVID.

2. Neuropsychiatric Aspects Of Long Covid

a) Risk Factors of Long COVID

Based on a study conducted by Townsend L et

al, 2020, found that survivors of COVID-19 who are experiencing symptoms such as persistent fatigue after the infection often happened in women, and those who have depression and anxiety beforehand. This finding is also in line with the research conducted by Poyraz BC *et al*, in 2020. Furthermore, Zhao YM *et al*, 2020, found there is an increment of blood urea nitrogen (BUN) and D-dimer levels in people who have the persistent symptom. Rando HM *et al*, 2021 added that the severity of COVID-19 infection in individuals is affected by the existence of fatigue, anosmia, ageusia, joint pain, shortness of breath, headache, cough, diarrhea, and muscle aches, where all these could lead to persistent symptoms.⁶

COVID-19 can affect mental health, both as a biological and psychological cause. The disturbance of sleep, depression, and anxiety in long COVID could be influenced by changes in life, work pressure, social isolation, economy, lack of knowledge, fear of re-infection, and the death of family members.³ Michelen *et al* 2021, explains that risk factors of Long Covid include age, sex, comorbidity, ethnicity, and severity from the acute phase.⁵

b) Pathology of Long Covid

There is several proposed mechanism for the occurrence of neuropsychiatry symptoms in Long COVID. Chronic fatigue is one the most frequent symptoms encountered in Long COVID. Based on a study conducted by Crook, Harry, et al, it is known that central, peripheral, and psychological factors play an important role in this condition.⁷ Blockage in the lymphatic system and accumulation of toxic substances to the nervous system center caused by the resistance of cerebrospinal fluid drainage through plate cribriform caused by olfactory neuron damage in COVID-19 possibly contribute to the incident of chronic fatigue in Long COVID.

Hypermetabolism in the frontal lobe results in systemic inflammation and cell-mediated immunity mechanisms also possibly play a role in the incident of chronic fatigue. Other psychological and social factors are also correlated to the tiredness that the patients feel. Direct infection of SARS-CoV 2 to muscle framework could cause dysfunction and weakness in the fibers contributing more of the incident of chronic fatigue.^{7,8}

Depression and anxiety are also prominent symptoms in long COVID. Studies show that these symptoms appear possibly due to the effect of isolation and social distancing caused by this pandemic or a direct consequence of COVID -19.^{7,8} of inflammation response as a result of SARS-CoV2 infection is also a possible contribution to this circumstance.⁸ Sleep disturbance is also a prominent symptom found, although the mechanism is poorly understood. It is thought to be caused by either the infection, the pandemic effect, or the combination of the two.⁷

c) Clinical manifestations of Long Covid

Neuropsychiatry clinical manifestations of long COVID vary for each individual. The results of the meta-analysis conducted by Badenoch, James. B, et al showed that insomnia is the most frequent symptom experienced, followed by fatigue, cognitive decline, anxiety, and post-trauma stress.¹ All these symptoms are told to appear <12 weeks after recovery from the hospital.¹ Michelen et al, and Rogers, Jonathan P et al also found the same thing, where neuropsychiatric symptoms range from sleep disturbance, anxiety, depression, post-trauma stress, and fatigue, where these symptoms occur up to 8-12 weeks after returning from the hospital.⁵ From all the studies it can be concluded that the three most frequent neuropsychiatry symptoms are sleep disturbance, depression, and anxiety.^{9, 10, 11, 12}

d) Management

Currently, treatment for long COVID is still focusing on the pharmacological aspects, but it is thought that rehabilitation could also help.⁶ Long COVID management should involve various aspects. Physical rehabilitation, for example, is needed because some patients could develop muscle weakness and neuropathy. Thus physical rehabilitation can help improve breathing capacity, muscle strength, and also the quality of life overall. Pre-existing comorbidities need to be managed as well to prevent further complications.

Patients experiencing long COVID could suffer from anxiety, depression, post-trauma stress to suicidal ideation, signifying the need for mental health management. Long COVID patients also need social service help concerning the social issues they might face such as social isolation, pressure from work, and even stigma.¹³

These days, several temporary approaches for Long COVID are proposed, including the use of psychological and behavioral tools, to help the patients cope with the situation. Some new treatment modalities cover acceptance management, peer support, to cognitive behavioral therapy (CBT). CBT can help patients to help process the trauma and change their view on the traumatic event.¹⁴

The general principles for managing the neuropsychiatry complications of COVID-19 in primary care include the following:¹⁵

- 1) Consider SARS-CoV-2 infection in addition to a stress-related pandemic, as a possibility for causing the neuropsychiatry symptoms
- 2) Acknowledge that patients with pre-existing psychiatric problems are prone to suffer from neuropsychiatry symptoms after being infected with COVID-19

- 3) The symptom must be monitored regularly and periodically, to assess and screen for depression, anxiety, stress, cognitive problem, self-harm, and suicidal idea
- 4) Behavioral and pharmacological therapy should be evidence-based, with considerations of the possibility of a drug-to-drug interaction.
- 5) Since COVID-19 affects various organs, multidisciplinary management by a multidisciplinary team is needed.
- 6) Telehealth offers an opportunity to expand access to care mental health while maintaining physical distance as a way to reduce the spread of the coronavirus; however, there are still limited studies on the efficacy of telepsychiatry for a certain population.

3. Conclusion

The most commonly found neuropsychiatry symptoms in long COVID are sleep disturbance, fatigue, depression, anxiety, cognitive problems, and post-traumatic stress disorder. Current treatment for long COVID comprises physical rehabilitation, management of pre-existing co-morbidities, mental health support, and social services.

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