



**A CASE OF MILD DEPRESSION EPISODE WITH COGNITIVE IMPAIRMENT AND
SUICIDAL THOUGHTS IN UKRAINIAN WOMAN AFTER COVID-19**

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ABSTRACT

Despite official finishing of COVID pandemic in 2023, doctors are still dealing with number of patients who had been affected with COVID-19 infection in different ways. Long-term consequences due to SARS-CoV-2 infection are still ongoing and considering as a lingering long-COVID syndrome in COVID survivors. We described the female with asthma, suffering from long-lasting psychiatric disturbance with suicidal ideations. This woman was diagnosed with a respiratory COVID-19 infection and developed a lingering headache, depressive symptoms accompanied by suicidal thoughts. She underwent investigation by standard screening tools for comorbid anxiety, depressive symptoms, sleep disturbances, fatigue, as well as cognitive function assessment and self-violent behavior prevention. The woman was under the close supervision of the family doctor and psychiatrist until improvement.

KEYWORDS: Long COVID syndrome, suicidal thoughts, cognitive decline, sleep disfunction, mild depression, “brain fog”.

Abbreviations

CDC - Centers for Disease Control and Prevention.

COVID – coronavirus disease

PCC – post-covid conditions

WHO – World Health Organization

INTRODUCTION

Although WHO already announced the end of COVID pandemic in May 2023^[1], we still have many people who are affected with COVID-19 infection in different ways. It may be a current infection as well as lingering long-covid syndrome in COVID survivors.

CDC defined post-COVID conditions (PCC) as a diversity of new, returning, or continuing health difficulties that people experience after being infected with the virus that causes COVID-19. Most people with COVID-19 get better within a few days to a few weeks after infection, so at least four weeks after infection is the start of when PCC could earliest be identified.^[2] According to CDC, people with PCC (or Long COVID) may have many symptoms, containing a broad range of continuous health problems with different levels of their activity limitation, which can last weeks, months, or years. PCC or Long COVID is progressing in 10-50% of people who had contracted the virus causing COVID-19

and have experienced long-term impact from this infection then.^[2]

People who experience PCC generally reported weakness 31.3%^[4] and fatigue 34.8%^[3], that interferes with daily life in 15.7%-36.9%.^[4] Symptoms got worse following physical or mental exertion. Survivors reported shortness of breath at 22.6%^[3], cough at 12.7%^[4], heart palpitations at 7.1%^[4], and chest pain at 14.5% and tightness at 5 %^[4], and other.

While the result varies depending on each person, some of the general neurological outcomes of COVID-19 stated so far are anosmia 12.7-27.6%^[3,4], headache 14.4%^[4], impaired consciousness 8.9%^[4], “brain fog” and cognitive impairment (29.3 % and 28.4% respectively)^[4], and impaired mental health 12.9%.^[4-7]

Other neurological symptoms rule in difficulty thinking or concentrating 15.6%^[4], sleep problems 17.5-23.5%^[3,4], lightheadedness 10.2%^[4], general anxiety 17.2%^[4] and depression 17.3 -26.4%^[4,8] with impairments in work performance 22.3-29.1%.^[3]

A few reports indicate that COVID-19 survivors are at amplified risk of mood and anxiety disorders three months post-infection.^[9,10]

Growing data shows that the coronavirus may be a cause of 'brain fog' and another neurological symptoms via numerous mechanisms.^[11] As already known, SARS-CoV-2 can enter the brain via different ways. It can invade across infected peripheral motor neurons, or it may enter via the olfactory nerve, crossing the blood-brain barrier.^[12-14] Sadly, presently there is no way to know who may develop or not the long COVID syndrome symptoms after having the illness.

Nowadays another major public health concern exists, including the long-term mental and physical health consequences of COVID-19. Therefore, we considered it is necessary to describe our patient.

We would like to present a female who experienced severe fatigue, sleep disbalance, "brain fog" and decreased mood accompanied by suicidal thoughts. These symptoms appeared couple weeks after COVID-19 infection.

As we know, the "brain fog" and suicidal thoughts are the most dangerous mental symptoms of COVID-19 disease which require additional and more strict patient supervision. She agreed to share her story in this case presentation to highlight the importance of early recognition such serious symptoms like depression or suicidal intentions.

Case history: A 44-year-old mother of two, a city of Kiev (Ukraine) resident; she is currently unemployed. She has been taking albuterol for asthma. She does not take alcohol, caffeine, or illicit drugs and lifetime non-smoker. Family history is noncontributory.

Being fully vaccinated and boosted, she contracted the COVID-19 infection in January 2023. She reported felling unwell over the couple of days before appearing a high fever of 39.5C for only 1 day duration, fatigue, muscle and whole-body aches, severe headache and an increasing in shortness of breath and wheezing. Therefore, she used her asthma inhaler for 5-6 time per day. No other symptoms were presented. She had not sought medical attention due to her temperature subsiding on the next day, but she obtained a sick certificate from her family doctor due to severe fatigue and asthma exacerbation.

Her home COVID-19 antigen rapid test was positive on the third day of the disease. She stayed home for a fortnight and had been unable to attend her work due to severe tiredness, muscle aches, and asthma symptoms exacerbation. Subsequently, her symptoms had subsided over the next 2 weeks, and she returned to her work.

At the time, she started to feel difficulties in expression her thoughts and decreased concentration, along with headache, which became more frequent mostly in the forehead area. She did not pay attention on that, relying on long recovery.

Over the next two weeks she had started feeling slow with moderate irritability and being pathetic at the same time. She described her sleep pattern like "irregular, without rest" and "feeling of weakness all the time". She also reported difficulty with concentration and that "memory is not working so good", "I cannot think clearly and feel like I am in the fog", as well as decreased mood with loss of habitual interests and pleasure. She clearly reported suicidal thoughts like "it would be better to die rather feel like that", or "my life is nothing now and I wish I would be dead". Her general muscle weakness and fatigue were persistent, she stopped working and spent most of the time lying in the bed and had noticed 5 kg loss. She has been counseled by a psychiatrist.

METHODS AND RESULTS

Psychological assessment was carried out using the common scales and questionnaires for primary care. The self-reporting Beck Depression Inventory (BDI)^[15] and Hospital Anxiety and Depression Scale (HADS)^[16] were used for depression and anxiety assessment, the Sniight-Hamilton Pleasure Scale (SHPS)^[17,18] – for anhedonia assessment, the General well-being schedule (GWB)^[19] for quality-of-life assessment. The cognitive functioning of the woman was assessed using the MiniCog Cognitive Assessment Questionnaire.^[20] The sleep quality was evaluated by the Pittsburgh Sleep Quality Index (PSQI)^[21], and suicidality was assessed by Suicidal Ideation Questionnaire.^[22] Neurological and psychiatric assessments were performed.

BDI = 16 - mild mood disturbance,
HADS = 19 – borderline either for depression (10) and anxiety (9),
SHPS = 30 – mild anhedonia,
GWB – 58 – means severe distress,
MiniCog = 4. Woman had difficulties in remembering and repeating words (2/3 recall at 3 minutes), but no problem in clock drawing test.

Global PSQI score = 11. The processing speed was slow: auditory processing - 3, visual processing – 4, linguistic processing (aphasia) - 4. She needed more time to take in, make sense of, and respond to auditory, visual, and spoken language information.

Suicidal ideations 9 out 15.

According to PSQI, she described her sleep pattern as early bedding along with late getting up time. She had no problems with falling asleep. Despite being in the bad 12 hours, the overall sleep time was 7-8 hours due to waking up during the middle of the night to go to the

bathroom, and inability to sleep 2-3 hours afterwards. She defined it as “unrefreshing”. The calculated sleep effectiveness was 66-58%. Therefore, she experienced some daytime dysfunctions.

Neurological examination. The woman complained of frequent headaches mostly in the forehead area and heaviness in the head in the morning. Pupils were symmetric, D = S, with normal convergence and accommodation. The face was symmetrical and cranial nerves were intact. There was no neck stiffness. Motor examination revealed 5/5 strength with 2+ deep tendon reflexes bilaterally and normal plantar response. Sensory examination was unremarkable. Finger-nose-finger and Romberg tests showed no dysmetria. No focal symptoms.

Mental status examination. She responded in a monotonous voice without enthusiasm. Calm and fully oriented. She complained of constant fatigue, difficulty with concentration and easy forgetfulness. No positive symptoms were observed. Thinking was tough and slow with suicidal thoughts, but she denied suicidal plan or intention. Judicious. Easy and rapid exhaustion of nervous processes were present. She agreed to be examined and run some tests.

Blood works and an MRI was unremarkable.

Differential diagnosis was performed with major depressive disorder, migraine headaches, and brain tumor.

This patient with asthma was diagnosed with long asthenic syndrome (syndrome of chronic fatigue) after COVID-19 infection concomitant with mild depression with suicidal thoughts, mild cognitive decline, and sleep dysfunction (U 09.9+ F32.0+ G93.31 on ICD-10).

DISCUSSION

Although statistically PCCs are found most frequently in people who had severe COVID-19 illness, this woman had mild-to-moderate disease but also has been suffering from it. She was initially vaccinated but contracted the disease in a couple of months later on. The woman had all symptoms describing “brain fog”: feeling slow, difficulty thinking/ concentrating, confusion and forgetfulness.

Of course, the period of social isolation over COVID-19 pandemic affected people’s quality of life in depth, including a decreasing in daily routine physical activity, leading to the development and advancement of mental disorders, such as cognitive and memory decline, depression and anxiety.^[23-25] However, our woman was not alone, she was surrounded and supported by her family and friends.

Roever’s L. et al.^[26] data confirmed COVID-19 impact on general mental health, leading to development of

cognitive decline, memory deterioration, anxiety, sleep variations, and depressive-like actions in many but not only hospitalized patients.

Some persons might be more at risk of developing PCC or Long COVID. Researchers are working hard to detect which people or groups of people are more likely will have PCCs and why. Studies have shown that some groups of people may be affected more by PCCs. There is a model and not an extensive list of people or groups who might be more at risk than other groups for developing PCCs^[27]: - people who experienced severe COVID-19 illness and were hospitalized or needed intensive care; and -people with underlying morbidities prior to COVID-19 infection.

Our woman has been living with asthma for a long period of time, so her underlying comorbidity might be as an influencing factor for long COVID developing.

According to statistical data, post-COVID mental disorders are more frequently occurring in females (36%) aged 18-24 (49.9%) and 25-49 (38.0%) years old.^[28] Cognitive impairment mediated by COVID-19 was observed in approximately 60% of patients and did not reach the degree of dementia.^[29]

Fortunately, there are a few health professionals who can help treat lingering COVID symptoms and aid recovery. They might be as a Family Doctor and more specialized health professionals, such as neurologist or even psychiatrist in case of behavioral problems concomitant with suicide thought or ideations.

This female was treated involving both pharmacological and non-pharmacological methods along with her regular asthma regimen. She was commenced on multivitamins, as well as using relaxation therapy and mindfulness, together with gradual physical exercise program, which made better her general mental health via activation of various signaling pathways.

Encouraging routine physical activity, according to Roever L.^[26], activates the Phosphatidylinositol-3-kinase (PI3K) pathway, increase BDNF (brain-derived neurotrophic factor) and irisin levels, leading to neurogenesis and inhibiting the progress of an anxious profile, a depressive-like behavior with suicidal thoughts and cognitive decline.

The endpoint of this new clinical condition is not yet well-known and is likely interrelated to the severity of clinical symptoms, underlying comorbid conditions, and treatment response. More clinical studies evaluating post-COVID patients are necessary to find out the length and the long-term results of this new clinical condition.^[30]

CONCLUSIONS

Sleep disorders, anxiety, and depressive disorders with suicidal thoughts, which did not exceed a moderate degree of severity, and asthenia dominated in the structure of the post-COVID syndrome.

Being physically active, is a low-cost, easy, and effective approach to recuperate or suppress the negative effects of long COVID.

Follow-up visits for COVID survivors should be carried out to monitor mental health and ensure early treatment in a timely manner.

Patients should be educated about the importance of self-monitoring at home and should be followed by a home health assistant, if possible, regularly.

Patients should be trained and promoted to seek emergency care if necessary.

Patients should be promoted to seek behavioral health counseling or be granted with mental health crisis hotline numbers, if associated with neuropsychiatric manifestations.

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