

Case Report

First Manic Episode After COVID-19 Infection: A Case Report After A Two-year Follow-up

Gita Sadighi¹ , Moslem Rajabi^{2*} , Tahereh Dezhm³

1. Psychosis Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

2. Department of Clinical Psychology, School of Behavioral Sciences, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

3. Department of Psychiatry, School of Behavioral Sciences, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

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Bipolar disorder**ABSTRACT**

Objectives: On 11 March 2020, the World Health Organization (WHO) announced the detection of a new virus epidemic in Wuhan, China. Many studies have shown that the SARS-CoV-2 virus can cause mental disorders, such as anxiety, depression, and bipolar disorder. Here, we presented a case without a history of psychiatric illness. After contracting COVID-19

Case Presentation: A 40-year-old woman was hospitalized for ten days and then discharged. However, on the fourth day following her discharge, the patient exhibited talkative, energetic, and distractible behavior. She believed herself to be God's daughter with the ability to cure COVID-19, leading to abnormal behaviors and necessitating readmission. Treatment was started with haloperidol 5 mg, sodium valproate 500 mg, and clonazepam 2 mg. By the 17th day, the patient's mania rating scale score had decreased.

Discussion: This case report underscores the significance of viral diseases as triggering and exacerbating factors in bipolar disorder. It also emphasizes the importance of considering viral infections as potential causes of psychiatric symptoms in individuals with COVID-19.

*** Corresponding Author:****Moslem Rajabi, PhD.****Address:** Department of Clinical Psychology, School of Behavioral Sciences, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.**Tel:** +98 (918) 4235561**E-mail:** rajabimoslem@yahoo.com

Highlights

- Mania is an integral component of bipolar disorder (BD), a debilitating psychiatric illness.
- Initial symptoms of mania may manifest in some SARS-CoV-2 patients, even those with no prior history of mental health issues.
- SARS-CoV-2-related mania typically emerges approximately fourteen days after infection.

Plain Language Summary

BD is a severe psychiatric condition characterized by extreme mood swings that significantly disrupt one's life. Various factors, including biological, psychological, and environmental influences, can contribute to the development or exacerbation of bipolar disorder. Our patient was a 40-year-old woman with no history of psychiatric illness and was admitted to Razi Psychiatric Hospital due to symptoms of bipolar disorder, such as psychomotor restlessness, increased talkativeness, euphoric mood, excessive affection, auditory hallucinations, and grandiosity. The patient was treated with antipsychotic (haloperidol) and mood stabilizer (sodium valproate) and discharged from the hospital after 17 days when her symptoms improved. There is a hypothesis suggesting a potential link between viral infections and the development of bipolar disorder. COVID-19 infection can induce manic episodes or even trigger bipolar disorder in individuals without a previous history of mental illness, possibly due to social and psychological factors and biological mechanisms. However, these symptoms often respond well to treatment with antipsychotic and mood-stabilizing medications. Therefore, it is crucial to pay attention to psychiatric symptoms in patients with COVID-19 who do not have a family and personal history of mental disorders.

Introduction

Coronaviruses constitute a large family of respiratory viruses that can lead to a spectrum of illnesses ranging from the common cold to more severe conditions, such as Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS). The emergence of SARS-CoV-2 and the ensuing COVID-19 pandemic in December 2019 initially originated in central China and swiftly spread to various populations [1].

On March 11, 2020, the [World Health Organization \(WHO\)](#) declared this novel virus a global pandemic. As of July 4, 2022, the reported cases of coronavirus infection have surpassed 546.3 million, resulting in more than 6.4 million confirmed deaths and 400,000 additional casualties [2]. Symptoms of SARS-CoV-2 infection include fever, fatigue, and respiratory and gastrointestinal symptoms, such as cough, shortness of breath, anorexia, and diarrhea [3]. There are concerns about the link between acute respiratory syndrome of the coronavirus and psychiatric diseases, but it is not clear whether the SARS-COV-2 virus can damage the central nervous system and cause mental symptoms [4].

This is the first case reported in Iran and aims to raise awareness regarding the impact of the coronavirus on the central nervous system, potentially leading to mental health issues. In this report, we provided details about the clinical progression, diagnosis, and treatment of the initial case of SARS-CoV-2 infection featuring manic symptoms. We also confirm the presence of SARS-CoV-2 through polymerase chain reaction (PCR) testing conducted on the patient's upper respiratory tract.

Case Presentation

This patient exhibited manic symptoms following hospitalization for acute respiratory issues and subsequent discharge. After the onset of the manic episode, a PCR test confirmed a positive diagnosis for SARS-CoV-2. The patient, a 40-year-old woman, had previously undergone cervical disc surgery for herniation between vertebrae 4 and 5. There was no prior history of psychiatric hospitalization (neuropsychology) for the patient.

Following her cervical disc surgery, the patient was discharged but readmitted two days later due to severe coughing, chest tightness, and fever. In addition, her test results were positive for the novel SARS-COV-2 virus. Over a period of ten days, the patient received a regimen of antibiotics (azithromycin and cefuroxime), hy-

droxychloroquine, and dexamethasone, following which she was discharged with medication instructions. Four days after her initial discharge, the patient's husband brought her to the Psychiatric Emergency Department of [Razi Psychiatric Hospital](#), affiliated with the [University of Social Welfare and Rehabilitation Sciences](#) due to symptoms, such as euphoria, insomnia (reduced need for sleep), irritability (bursts of anger and franticness), and incoherence. Prior to re-admittance, a PCR test was conducted, yielding a positive result, and subsequently, the patient was admitted to the quarantine ward of [Razi Psychiatric Hospital](#).

Additionally, to mitigate aggression and alleviate the symptoms of COVID-19, she received treatment with prednisolone and haloperidol, and concurrently, an evaluation by a psychiatrist was conducted. During the clinical interview, the patient made several extraordinary claims, stating that she possessed substantial wealth with multiple properties, held passports from all countries worldwide, could converse in all languages globally, held a doctoral degree in artificial intelligence from [Sharif University of Technology](#), and possessed a divine aura with the ability to accurately determine heart rate, body temperature, and oxygen levels. The patient also asserted that she was God's daughter and had been endowed with the power to cure COVID-19. Assessment of the patient's mental state revealed symptoms of psychomotor restlessness, excessively intimate demeanor, pressured speech, euphoric mood, overt affection, distractibility, auditory and visual hallucinations, grandiose delusions, and a lack of insight, judgment, attention, and orientation. No abnormalities were observed during the physical and neurological examinations. Treatment for the patient involved administering haloperidol 5 mg, biperidin 2 mg, sodium valproate 500 g, and clonazepam 2 mg.

There was no history of mental illness in the patient's family, and for the past eight years, she has been employed in designing traffic signs. She has been married for 14 years and has one child. She resides with her family, does not smoke, and has no history of alcohol consumption or illicit substance use.

Treatment and Follow-up Results

After 17 days of hospitalization and successful control of the euphoric and psychotic symptoms, the patient was discharged from the hospital with the following medication instructions: Haloperidol 5 mg twice a day was administered as an antipsychotic, 500 mg sodium valproate three times a day as a mood stabilizer, biperidin three times a day to reduce the extrapyramidal side effects of

haloperidol, and clonazepam 2 mg before bedtime. The patient was followed up by telephone two weeks after discharge and the patient's family and the patient herself reported the improvement of symptoms. With the guidance of a psychiatrist, the patient decided to discontinue her medication after six months. To monitor her progress, a psychiatric resident from the emergency department at [Razi Psychiatric Hospital](#) evaluated the patient every three months. The last assessment was performed two years after the initial diagnosis of the disease, and it revealed no mood symptoms or hypomanic episodes. Additionally, the patient's psychosocial and occupational functioning had returned to a completely normal state.

Discussion

In this study, we investigated a case of prolonged SARS-CoV-2 infection with manic symptoms. COVID-19 has been associated with the emergence of mental illnesses for many reasons. Studies have shown that in general, manic symptoms in patients with SARS-CoV-2 are caused by neural cascades due to SARS-CoV-2 invasion and increased pro-inflammatory and inflammatory responses, hypoxia, and iatrogenic factors, such as antibiotics and steroids [5]. Iqbal et al. [6] showed that the emergence of mania could be caused by a psychosocial factor or due to an inflammatory mechanism. Park et al. [7] showed that COVID-19 infection can cause a primary mania period, and SARS-CoV-2 can stimulate the production of cytokines by penetrating the blood-brain barrier. The main symptoms experienced by mania due to COVID-19 in different patients include insomnia [4, 8] abnormal behavior [7, 9], delirium [10, 11], irritability [12], restlessness [13], auditory hallucinations [6, 7] and aggressive behavior [14], which were also observed in our treated patient. These findings support the hypothesis that the psychiatric condition experienced represents a period of mania and does not necessarily indicate a separate diagnosis [5]. Furthermore, the observed improvement in mood swings and psychosis following appropriate medical treatment, including antipsychotics and mood stabilizers, further supports this idea.

Conclusion

The occurrences of mania in the context of COVID-19 are on the rise. Understanding that psychological, biological, and environmental factors all contribute to the development and exacerbation of bipolar disorder underscores the multifactorial nature of the disease. With the high global prevalence of SARS-CoV-2 infections, this serves as a warning to mental health professionals. Consequently, physicians should be more vigilant when

they encounter manic symptoms in COVID-19 patients, even if these patients are physically asymptomatic and have no prior history of psychiatric issues. COVID-19 may exacerbate a pre-existing bipolar disorder [5] or due to social and psychological effects and biological pathways, it can cause bipolar disorder without a prior context [5]. Therefore, there is a growing emphasis on paying attention to psychiatric symptoms in COVID-19 patients who lack a family or personal history of mental disorders. It can also be concluded that bipolar patients need more clinical attention due to their susceptibility to re-exacerbation caused by pandemic-related stress, social isolation, difficulties in accessing medical care, and changes in treatment follow-up

Limitations

This study has specific limitations. This is a case report and the assumptions raised should be confirmed by future studies. In addition, COVID-19 real-time PCR testing in cerebrospinal fluid (CSF) was not conducted.

Ethical Considerations

Compliance with ethical guidelines

The present study is a case report and does not require obtaining an ethics code.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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