Case Report

A CASE REPORT OF MANIC EPISODE FOLLOWING SARS-CoV-2 INFECTION

Mithun Devasia[1], Anil Prabhakaran[1], Rithwik S[1]

[1]Department of Psychiatry, Government Medical College, Thiruvananthapuram
*Corresponding Address: Junior Resident, Department of Psychiatry, Government Medical college, Thiruvananthapuram
Email: mithunpdev@gmail.com

ABSTRACT

The novel coronavirus infection has been associated with various neuropsychiatric sequelae, including manic episodes, but only a few cases have been described in the literature. Here we present a case of a manic episode in an individual following COVID-19 infection, probably linked to the virus. This case report highlights the need to identify and assess various neuropsychiatric manifestations of COVID-19 and the need for further research on its manifestations, biological mechanisms, and long-term sequelae.

Keywords: COVID-19, manic episode, SARS CoV-2, EEG

INTRODUCTION

The emergence and global spread of the novel coronavirus (COVID-19) have imposed a significant mental health burden across the whole world.[1] Evidence suggests that severe acute respiratory syndrome coronavirus- 2 (SARS-CoV-2) may be associated with neuropsychiatric disorders.[1] Emerging neuropsychiatric sequelae of COVID-19 include encephalopathy, anxiety, depression, mania, and trauma-related disorders.[2] Much is yet to be known about the possible biological mechanism, presentation and long term sequelae of manic episode induced by COVID-19 infection.

CASE REPORT

Mr K, aged 53, is a driver by profession in the government sector. He is married and belonged to middle-class background. He was apparently well adjusted. He came to the outpatient department of the medical college unit at the mental health centre, Thiruvananthapuram, for consultation in January 2021.

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His symptoms started nearly two weeks before, as a bilateral occipito-parietal headache, which was of moderate to severe intensity and lasted throughout the day. Then he developed sore throat, fever, and generalized body ache. By the third day of onset of symptoms, he consulted a local hospital and was tested for COVID-19. The result came positive, and he was admitted to a COVID-19 First line Treatment Centre (CFLTC) in the city. On the second day of admission, he noticed having anosmia. He shared the room with another patient, and no behavioural problems were reported during the admission period. He was treated initially with paracetamol, pantoprazole, vitamin B complex tablets, and due to his persistent upper respiratory symptoms, azithromycin 500 mg once daily was added on the 5th day of admission.

On the 8th day post-admission, the patient with whom he was sharing room, noticed him having poor sleep, pacing around at night, expressing suspiciousness, talking excessively over the telephone, and informed Mr

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K's relatives about the same. However, there were no pervasive mood changes then. On the 10th day after admission, COVID rapid antigen test turned negative. He was discharged and sent home. At home, the behavioural problems worsened in the form of increased talk, reduced sleep, abnormally elevated self-esteem. The wife noticed him cleaning and arranging the room multiple times, even at odd hours, and burning his old clothes.

He was talking excessively and could not be interrupted by others. He became increasingly irritable and lashed out over trivial issues, which was quite unlike his nature. In view of these behavioural disturbances, he was brought to the outpatient department of the medical college unit at the mental health centre Thiruvananthapuram after two days at home.

There was no history of any significant medical illness or psychiatric disorder. There was no history of substance dependence. However, there was a history of behavioural symptoms as episodes of pervasive irritability, reduced sleep, increased talk suggestive of bipolar disorder in brother. At present, he is well maintained. However, details of medications are not available.

In the outpatient department, mental status examination revealed a conscious, well-oriented person with increased psychomotor activity and talk. His mood was euphoric. Flight of ideas was present. Grandiose ideas were also expressed. Neurological examination and other system examinations were within normal limits. He was admitted. The Young Mania Rating Scale (YMRS) was introduced for evaluation. Serial mental status examinations on the following days revealed similar features suggestive of a manic episode. No features of delirium were observed. He was started on risperidone 2 mg per orally initially; two days later, carbamazepine 200 mg was also added. Carbamazepine was hiked to a dose of 300 mg on the next day and 400 mg on the day after. A consultation was sent to the department of neuro medicine of the medical college. The mood symptoms of the patient improved over the next few days. However, he was referred for inpatient evaluation as per opinion from the neuro medicine department. The patient's YMRS score decreased gradually, from 36 on the 1st day of admission to 10 on the 7th day when he was referred.

Blood investigations showed normal blood counts, lactate dehydrogenase (LDH) was slightly elevated. However, D-dimer, X-ray, CT brain, ECG were within normal limits.

EEG study revealed epileptiform discharges from the left temporal region, after which probability of Herpes (HSV) encephalitis was considered, and injection acyclovir was started empirically, at a dose of 500mg iv q8 hourly. MRI brain showed only small vessel ischemic changes. Following admission in neuro medicine, lumbar puncture was performed, CSF study was within normal limits. The viral panel was negative for HSV. By the 3rd day of admission in neuro medicine, his mood was euthymic, and he was no longer expressing grandiose ideas. Sleep also showed improvement, and he was discharged on the 7hday. The patient was advised to continue acyclovir intravenously from the local hospital for one week more. It was followed by oral acyclovir at a dose of 3200 mg/day in four divided doses. The patient was later followed up one week after discharge at Psychiatry OPD and maintained well on tab carbamazepine 400 mg and risperidone 2 mg. He was reviewed again after two weeks, and then he was adherant on medications and had started going to work. The patient provided informed consent for publication of the case details.

DISCUSSION

The described features are indicative of a manic episode. But in view of the lack of previous mood episodes,late age of onset, the temporal correlation with the viral infection, lack of history of substance use, a short course of the illness and the associated EEG changes, we suspect that this manic episode could probably be a neuropsychiatric manifestation of SARS CoV-2, thus considering the diagnosis of bipolar disorder due to SARS CoV-2 infection with manic features, as per DSM 5. The family history of bipolar disorder in his brother suggests a probable genetic vulnerability in this patient and might be a contributory factor.

The treatment for COVID had included azithromycin as part of the treatment regimen. Though cases of 'antibiomania' have been described with clarithromycin (another member of the macrolide group antibiotics) [3], instances of manic episodes with azithromycin are not well described in the literature.

The temporal epileptiform discharges and the clinical picture raised suspicion of HSV encephalitis, but the viral panel for HSV was negative. Interestingly, a recent metanalysis has found that epileptiform discharges are common in COVID 19 though instances of seizures were rare.[4] MRI brain revealed small vessel changes. The patient does not have any history suggestive of hypertension, diabetes, or smoking. Neuroimaging studies have yielded cerebral vascular changes in patients with late onset bipolar disorder. Though non-specific, small vessel changes had also been described associated with COVID 19 in the literature.[5]

Neurotropism of the SARS CoV 2 virus has been well described in the literature. Neuropsychiatric manifestations have been well documented in COVID.[6] The entry of SARS-CoV-2 into human host cells is mediated mainly using angiotensin converting enzyme-2 (ACE-2) as a receptor. Interestingly, in addition to the lungs and gastrointestinal tract, the ACE-2 is also expressed in the endothelial cells of brain vasculature, a possible route of entry of the virus into the brain.[7,8] The cytokine storm, which is considered a hallmark of the SARS CoV-2 infection, might lead to neuroinflammation and impaired monoaminergic transmission[9], possibly contributing to the pathogenesis of psychiatric disorders. A possible mechanism may involve immune system activation and its effect on the CNS. Infection associated immune activation and release of inflammatory mediators is considered a possible etiologic factor behind bipolar disorder.[10]

As per the available information, the possibility of primary bipolar disorder cannot be completely ruled out. Hence the patient would be kept on constant follow-up, and the further emergence of a mood episode in future will be identified.

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