

Psychosis after SARS-CoV-2 (COVID-19) infection

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Abstract

Psychiatric manifestations associated with COVID-19 infection have become a subject of study in the wake of the global pandemic. Some psychiatric disorders such as anxiety and depression are well recognized with the COVID-19 infection while overt psychosis is less so.

We present four cases of first-onset psychotic episodes

with a clear temporal relationship to COVID-19 infection. They appear mainly affective in nature, although only time will determine their eventual progression.

Key words: SARS CoV-2, COVID-19, psychosis, affective, mania

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Introduction

The severe acute respiratory syndrome (SARS) coronavirus-2 (COVID-19) is known to cause neuro-psychiatric complications (1-3). Anxiety and depression during and after the infection are well recognized (1-3). Psychosis, in the context of COVID-19, however, is not documented widely although there are case reports (4-7).

Here we discuss four cases of psychosis with different presentations following uncomplicated and complicated COVID-19 infection.

Case 1

A senior executive in his late forties who had received only one dose of the COVID-19 vaccine, developed COVID-19 infection in June 2021. He did not require hospitalization for the respiratory symptoms which resolved with symptomatic treatment. Around the seventh day after his respiratory symptoms had improved, he developed insomnia and unexplainable fears suggestive of anxiety. After three sleepless nights, he started to believe that 'people were trying to get him'. When his wife tried to calm him down, he thought she was not his wife, but an 'avatar' speaking to him. He did not have a family history of psychiatric illness. He was admitted to the hospital and investigated for underlying delirium. Investigations including full blood count, C-reactive protein, blood culture, thyroid, renal and liver function tests, MRI scan of the brain and electroencephalogram (EEG) were normal.

He was initially started on olanzapine 5 mg with poor response. On subsequent assessment in two weeks, he had clear depressive symptoms and therefore citalopram 20 mg daily was added. A diagnosis of a severe depressive episode with psychotic symptoms was made. He completely recovered three weeks later and remained well. His antidepressants were continued but the antipsychotic was tailed off after six months.

Case 2

A 17-year-old schoolboy developed COVID-19 in September 2021. His symptoms were mild fever and headache and he recovered at home with symptomatic treatment. Two weeks later he developed fearfulness and headache. He reported that officers from the Criminal Investigative Department (CID) were following him. He did not have a history of seizures or a family history of psychiatric illness. On assessment, he appeared perplexed with delusional mood. Further, he believed his cousins knew details of the birth of Jesus which he did not know about. He was oriented and his cognitive functions were normal. He was started on risperidone 1 mg a day. He developed a generalized tonic-clonic seizure one day after being started on risperidone. He was admitted to the hospital at this point and all the investigations including the full blood count, serum electrolytes, blood sugar parameters, COVID-19 PCR, EEG and MRI of the brain were normal. He was started on levetiracetam 500 mg twice a day by a neurologist and did not develop any subsequent seizures.

In addition to continuing risperidone, he was also started on citalopram 10 mg daily as he was found to have significant anxiety symptoms, low mood, and lethargy. Three days after initiation of citalopram he developed manic symptoms such as overactivity, plans to play cricket for his school, enter the national cricket team and other grandiose schemes. A diagnosis of organic (COVID-19 related) mixed affective episode with psychotic symptoms was made. The citalopram was stopped and the symptoms resolved three weeks after optimizing the risperidone dose while continuing the levetiracetam.

Case 3

A 20-year-old manual labourer presented with irritability, increased energy, beliefs of having special powers and hearing voices of people whom he could not account for, during the last seven days. He had not been vaccinated for COVID-19 and had tested positive ten days before the presentation to psychiatric services. He had been home quarantined for the COVID infection and recovered without any complications. He did not have a history of psychoactive substance use or a past or family history of psychiatric illness.

On examination, he had grandiose delusions and mood congruent second person auditory hallucinations. His orientation and physical examination were normal. The investigations including full blood count, C-reactive protein, fasting blood sugar, liver and renal functions were normal. The diagnosis of a manic episode with psychotic symptoms was made. He was started on olanzapine which was titrated up to 10 mg twice daily and sodium valproate 400 mg twice daily. His symptoms fully subsided after three weeks of the above treatment.

Case 4

A 63-year-old female with ischaemic heart disease, hypertension and bronchial asthma presented with increased speech, reduced need for sleep and aggressive behaviour for two weeks duration. She had no previous personal or family history of psychiatric illness. She did not have a history of diabetes mellitus.

She had become positive for COVID-19, six days after getting the second dose of the COVID vaccine. She had been admitted to the COVID-19 care unit and administered intravenous dexamethasone for a week due to the severity of respiratory symptoms. Two days after discharge, she had become aggressive towards her husband. She had claimed she was having special powers and accused her husband of conspiring against her. On assessment, she was found to have pressured speech and irritability. Her mood was labile. This was accompanied by grandiose and persecutory delusions. She was oriented in time, place, and person. The physical examination was normal.

Apart from a fasting blood sugar level of 149 mg/dl, other biochemical investigations were normal. She was started on risperidone and titrated up to a dose of 6 mg daily. Her symptoms resolved over the next four weeks.

Discussion

Viral infections are aetiological factors for psychotic, depressive and manic episodes (8). The first three cases highlight the fact that COVID-19 is no exception. There were affective components in all patients that we discussed above. However, there are other reports where only psychotic symptoms were associated with COVID-19 infection (9-12).

The CORONERVE Programme in the United Kingdom exploring neurological and psychiatric syndromes associated with suspected or confirmed COVID-19 infection and/or vaccination and other cohort studies show that 5.8% of survivors of COVID-19 infection are diagnosed with psychiatric manifestations between 14 and 90 days after the infection (8, 13). Multiple factors are implicated in their aetiology (14). One hypothesis is that inflammatory processes including activation of kynurenine pathway contribute to a wide range of psychiatric manifestations including depression, mania, and psychosis by exerting its effects on NMDA receptors and altering glutaminergic neurotransmission (15,16). The possibility of vasculitis, cerebral infarction and encephalitis too need to be considered (17). The patient we described in Case 2 in particular may have developed his symptoms due to the above-mentioned processes as he developed a seizure. However, there was a possibility of low dose risperidone induced seizure too (18).

The above patients will need longer term follow up to determine whether they will progress to bipolar affective disorder, schizoaffective disorder, or schizophrenia in the future. Case 2 and 4 suggest a clear interplay of organic factors in the aetiology. Case 4 manifests as a correlation between COVID-19, steroid treatment and mood and psychotic symptoms. Case 1 and 3 have a temporal relationship to COVID-19 with the onset of the psychiatric disorder occurring for the first time after developing the COVID-19 infection. It is not very clear in the latter two case histories, whether the infection and the associated stressors both physical and emotional, brought on the disorder in a previously vulnerable individual. Thus, we did not categorise them under the organic category but considered the possible role that COVID may have played in precipitating the symptoms.

Conclusion

Clear psychotic episodes, especially with an affective flavour following COVID-19 infection are documented here. Early identification and treatment, especially with an openness to organic aetiology would mitigate serious risks and further deterioration in the health of the patients thus affected.

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Author contribution

All the authors were involved in the conception, literature survey and writing of the manuscript. All authors approved the final draft.

Conflicts of interest


None declared.

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