



Bio-psycho-social Approach to a Case of Mania-like Symptoms Associated with COVID-19 Infection

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INTRODUCTION

The novel coronavirus (COVID-19), severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is known to primarily infect the respiratory tract. There is also growing evidence of neuropsychiatric complications in persons infected with SARS-CoV-2.^[1] But they are not the result of a linear cause and effect medical model but are the result of a complex circular model of multiple causes and effects. Here, we present a case report of an adult patient with SARS-CoV-2 infection, treated with systemic steroids, who presented with mania with no prior psychiatric history and in the absence of significant medical or pulmonary symptoms. The bio-psycho-social underpinnings in the etiology of the same and further management considerations are discussed further.

CASE SUMMARY

A 65-year-old male started experiencing abrupt onset high-grade fever. In view of the recent pandemic, he was advised home isolation and tested positive (RT-PCR) for COVID-19 infection. As fever did not resolve with empirical treatment, the biochemical parameters were measured (Table 1). He was started on oral dexamethasone 4 mg twice daily. Within a week, his fever started to resolve (biochemical parameters reached normal limits), and his steroids were tapered and planned to be stopped within a week. At the same time, family members noticed changes in his behavior. His need for sleep decreased and his appetite increased from earlier. He became over-talkative, started making multiple improbable future plans, appeared more energetic than usual, and was overly optimistic. Hence, he was brought to psychiatry emergency in view of hyperactivity, verbal aggression, and increased sexual interests.

Past history was negative for significant medical, psychiatric, or substance use.

Family history was suggestive of a single manic episode in the daughter. Personal history was unremarkable. His vitals were stable, and his general physical and systemic examination was within normal limits.

On the interview, there was remarkable psychomotor agitation, loud, pressured speech, irritable mood, flight of ideas, ideas of grandiosity, impaired attention and concentration. A clinical diagnosis of F06.8 (other specified mental

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Table 1: Hematological, biochemical and radiological parameters

Investigations	Day 1 (SARS-CoV-2 infection)	Day 7 (SARS-CoV-2 infection)	Day 10 (SARS-CoV-2 infection)	Day 14 (SARS-CoV-2 infection)
Haemoglobin (gm%)	12.6	11.50	10.80	11.70
TLC (/cmm)	4600	5100	14500	11900
NLR	1.04	1.82	4.33	2.42
Platelets (lakh/cmm)	0.73	0.91	1.53	2.39
ESR (mm/1 st hr)	28	30	30	33
CRP (mg/L)	3.62	11.49	6.51	3.63
D-dimer (µg/mL)	0.29	0.26	0.45	0.27
IL-6 (pg/mL)	2.1	79.20	488.2	100.6
Procalcitonin (ng/mL)	0.035	0.0	0.024	0.015
Ferritin (ng/mL)	-	211.4	211.4	115.6
Fasting blood glucose(mg%)	-	145	158	137

MRI brain showed global cerebral cortical atrophy, periventricular leukomalacia, and areas of demyelination in the white matter of RT Centrum Seminoale-?post ischaemic changes.

disorder due to a known physiological condition) was made and tab risperidone 2 mg was started. Psychosocial interventions focusing on activity scheduling and psycho-education were initiated. The symptoms exhibited rapid reduction (YMRS score was reduced from 31 to 2) and the patient was discharged in a week on risperidone 2 mg. He maintained well during subsequent follow-ups with no observable side effects, with eventual discontinuation of medication within the next 6 to 7 months.

DISCUSSION

This case illustrates an association between neuropsychiatric symptoms in SARS-CoV-2 patients and the complex interplay of three major domains (biological, psychological and social) in the genesis of psychiatric illness. Infection-associated immune activation and subsequent release of inflammatory factors is one of the potential pathogenesis of bipolar disorder.^[2] The patients infected with SARS-CoV-2 produce high amounts of pro-inflammatory factors and chemokines, probably leading to activated T-helper-1 (Th1) cell responses that might contribute to mania-like symptoms.^[3] This is supported by increased plasma levels of IL-6 and CRP in the acute phase of the illness in the index case as well (Table 1). The ischaemic and demyelinating lesions

in the white matter of RT centrum seminoale also hint towards the neuroinvasive nature of the virus as reported in an earlier case report too.^[4] Additionally, as has been reported, the most frequent Adverse drug reactions(ADRs) after short-term corticosteroid use include euphoria and hypomania.^[5]

A family history of manic symptoms also hints towards a genetic predisposition to develop affective disorder in this case. Even with biological evidence of the causation of illness, the role of psychosocial factors cannot be refuted. The index case had a disruption of his routine due to quarantine. His sleep cycle and meal times were altered. He could not go for his routine leisure activities or work and found it difficult to channel his energy. He was further worried about the isolation and the effect of his illness and the pandemic on his family and future plans.

CONCLUSION

To conclude, COVID-19 infection, as well as associated bio-psycho-social changes, can predispose an individual towards the development of major psychiatric illnesses. Multimodal interventions, keeping into account these factors, are likely to result in rapid recovery. Longitudinal course and prognosis need to be studied further.

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CONFLICT OF INTEREST

None

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