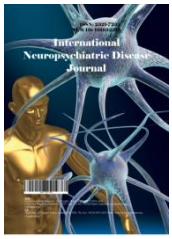

International Neuropsychiatric Disease Journal

17(2): 16-21, 2022; Article no.INDJ.87488
ISSN: 2321-7235, NLM ID: 101632319

Asymptomatic COVID-19 Infection Induced First Episode Psychosis: A Case Series

Riyal Das [aω], Aniket Mukherjee [a#*], Sujit Sarkhel [b†], Paramita Roy [b†] and Amit Kumar Bhattacharyya [b‡]

[a] Department of Psychiatric Epidemiology, Institute of Psychiatry, IPGME and R, Kolkata, India.
[b] Department of Psychiatry, Institute of Psychiatry, IPGME and R, Kolkata, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/INDJ/2022/v17i230196

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/87488

Clinical Practice Article

Received 15 April 2022
Accepted 25 May 2022
Published 26 May 2022

ABSTRACT

Aims: We presented 3 similar cases of 1st episode psychosis that occurred after Corona Virus Disease -2019 (COVID-19) infection which we treated at our institute's on going post-COVID-19 mental health clinic, to provide more evidence to the existing literature and to describe whether an asymptomatic COVID-19 infection can also induce psychosis in previously healthy individuals and tried to elaborate the probable etiology and nature of the psychotic symptoms.

Presentation of the Cases: All the 3 cases had COVID-19 infection, few days before their psychotic symptoms started for the 1st time. They didn't have any history of regular substance or medication use that are known to induce psychosis or any previous history of psychiatric disease or family history of psychiatric disease, without any abnormality in physical examinations and laboratory investigations. All the cases had history of stress which were not overwhelming (except the 3rd case) and were mostly related to COVID-19 infection and pandemic associated social and financial stress. 1st case (54 years, married male) developed delusion of persecution, delusion of reference, 2nd and 3rd person auditory hallucinations, 2nd case (61 years, widower male) developed delusion of persecution, 2nd person auditory hallucination (commanding type), disinhibited behaviour (disrobing in public) and the 3rd case (32 years, unmarried male) developed delusion of persecution

[ω] Assistant Professor and Head of the Department;
[#] Demonstrator;
[†] Associate Professor;
[‡] Director Professor and Head of The Department;
**Corresponding author: E-mail: ask.aniket@gmail.com;*

and delusional misidentification (Intermetamorphosis). All of them responded well to commonly used antipsychotics within 4 weeks that prompted a diagnosis of Acute and Transient Psychotic disorder according to ICD-10 criteria.

Discussion: This study points out that even an asymptomatic COVID-19 can induce psychosis for the first time in life, where the etiology most probably is the direct effect of the virus itself on brain or the COVID-19 and pandemic related stress which is supported by the fact that factors like family history of psychiatric disease, substance use or medication use or any comorbidity that can induce psychosis were also absent. The psychopathological findings were persecutory delusion and auditory hallucinations with one case having Intermetamorphosis phenomenon which is a rare finding and perhaps a novel finding in post-COVID-19 Psychosis.

Conclusion: All COVID-19 infected individuals should be screened early for appearance of any symptom that raises the suspicion of psychosis. Large studies are needed to ascertain the etiology of post-COVID-19 psychosis.

Keywords: COVID-19; psychosis; first episode psychosis; asymptomatic COVID-19; delusion; hallucination; delusional misidentification; intermetamorphosis.

1. INTRODUCTION

Corona virus disease-2019 (COVID-19) [1] is not only responsible for millions of deaths but also associated with neuropsychiatric sequelae at an alarmingly high prevalence of around 34% [2], which are mostly anxiety disorders, depression and post traumatic disorders [3], but a retrospective study by Taquet et al. [2] on COVID-19 survivors indicated that post-COVID-19 psychosis (1.4%) is also not much behind.

The number of studies investigating psychotic disorders that occurred after or concurrently with documented COVID-19 infection without any prior history or definitive cause, except which can be attributable to COVID-19 are still less in number and are mostly case reports [4] with few case series [5].

A longitudinal study showed 45% increase in new onset psychosis during 2020 in comparison to 2019, but the link between COVID-19 and psychosis could not be well established as the RTPCR for COVID-19 were mostly negative in those cases [6]. Also, studies mostly showed psychosis is more likely among severe COVID-19 survivors who had been hospitalized but chances are less among non-hospitalized patients [2,7] and none of the studies clearly focused on the fact that whether an asymptomatic COVID-19 infection can also cause psychosis.

On the other hand, the fact that furthers the need for more researches on COVID-19 related psychosis, is the appearance of new strains like Omicron (B.1.1.529) and its variants which are regarded as variants of concerns (VOC) [8] spreading rapidly throughout the countries that may cause huge psychiatric disease burden and significant morbidity.

Here we presented a case series consisting of 3 cases of COVID-19 infection, each of them presented at our institute's post-COVID-19 mental health clinic as 1st episode psychosis after asymptomatic COVID-19 infection without having any prior history or family history of psychotic disorders.

2. PRESENTATION OF THE CASES

2.1 Case 1

A 45 years old married man, educated upto 9th standard, working as a tailor, living with his wife and son, an occasional smoker, without any history of psychiatric disease or family history of any psychiatric disorder, with absence of history of any other substance abuse, long-term medication or physical comorbidity, presented with complaints of suspiciousness, fearfulness, hearing of voices even when alone, reduced sleep and occasional agitation for last 8 days, that started 1 week after being diagnosed as COVID-19 positive by RTPCR (Reverse Transcriptase Polymerase Chain Reaction) of nasopharyngeal swab on 03/04/2021. He was tested for COVID-19 because his wife became symptomatic and had tested positive for COVID-19. He told us that his next-door neighbors and some unknown people want to harm him and his son. He was hearing voices that were speaking to him directly as well as discussing about him, which were threatening in nature and were about killing him and his son. He believed that they want to end his family and family lineage. The

patient was collecting rods and sticks because he wanted to protect himself and his family from any probable attack conspired by those who were persecuting him.

Mental Status examination revealed delusion of persecution, delusion of reference, 2nd and 3rd person auditory hallucinations, absent judgement and insight. He did not receive any medicine for COVID-19 as he was completely asymptomatic and was in home isolation only.

No abnormality was found on general physical examinations, systemic examinations. Blood and urine biochemistry and MRI of brain (non-contrast) was normal. He was started with Olanzapine 10 mg/ day once a day and was reviewed after 1 week and 2 weeks and his symptoms reduced (BPRS score was 91, 46 and 22 on 1st, 2nd and 3rd visit respectively)

Absence of any pre-existing disease, absence of use of medication and alcohol or any other substance of abuse, negative family history of any psychiatric disease, normal biochemical examination of blood, urine and MRI of Brain ruled out organicity. Preserved consciousness and orientation ruled out delirium. Symptom resolution within 4 weeks prompted a provisional diagnosis Acute and Transient Psychotic Disorder (ICD-10).

2.2 Case 2

A 61 years old, widower, graduate, working as an accountant, with diagnosed hypertension which was well controlled on medication, without any previous psychiatric history or family history of psychiatric disorder or history of substance use, living with his son and daughter in law, presented with suspiciousness, reduced sleep, hypervigilant look, delusion of persecution (that his colleagues implanted a computer virus in him, so that they can spy on him), 2nd person commanding hallucination (some evil spirit is commanding him through the computer virus to do things which he doesn't want to do but he will be killed if he doesn't follow the command) and disinhibited behaviour in the form of disrobing in front of others, 3 days after being diagnosed of COVID-19 by RTPCR of nasopharyngeal swab on 3rd January 2022 (he was tested for COVID-19 because many of his office colleagues were tested positive for COVID-19). He presented in our OPD after 3 days of his symptoms started.

His physical examination, biochemical parameters of blood and urine and MRI of brain didn't reveal any significant abnormality. He was started with 1 mg / day tablet Risperidone on his first visit, 10 days after the symptoms started, and assessed after 1 week and the dose was increased to 3 mg/ day by increasing 0.5 mg/day, tablet Trihexyphenidyl 2mg /day was started in 2 divided doses as he was having hand tremor, and was again assessed on 2nd week. His symptoms resolved completely on 3rd visit with BPRS scores being 90, 61 and 21 on 1st, 2nd and 3rd visit respectively.

With the presence of above-mentioned clinical features, normal laboratory investigations, without having any prior history or family history of psychiatric disorder, in the absence of substance use or use of any medication that can induce psychosis, and the patient being conscious and oriented (that ruled out delirium), the provisional diagnosis of Acute and Transient Psychotic disorder (according to ICD-10 criteria) was made.

2.3 Case 3

In the 3rd case we treated a young man of 32 years age, graduate, unmarried and living in a joint family, who had no family history or previous history of any psychiatric disease or physical comorbidity. He also didn't have any history of use of any medication or history of any addiction to alcohol and drugs. He was working as sales execute but lost his job after the COVID-19 pandemic started.

This young man presented with complaints of social withdrawal, absent eye contact, occasional agitation and aggressive episodes (directed towards his family members), reduced sleep, delusion of persecution (occasional refusal to food and water and sniffing them before eating or drinking, as he thought that his family members are trying to poison him), delusional misidentification (his friend , who died of COVID-19 is not actually dead but has been replaced by his cousin brother, an Intermetamorphosis phenomenon) for last 3 to 4 days which started after an initial 5 days period of excessive worrying about dying, restlessness, perplexity, reduced sleep, after being diagnosed COVID-19 positive by RTPCR for Nasopharyngeal swab and after hearing the news of death of one of his friends due to COVID-19, both of which occurred on the same day creating a sudden stressful situation for him.

Complete physical examination, Biochemical parameters of blood and urine including urinary drug screening and MRI of brain did not reveal any abnormality. We started oral olanzapine 5 mg /day on his first visit which was increased to 10 mg /day divided into 2 doses on 2nd visit after 1 week and also lorazepam tablet 2mg/ day at night was started due to inadequate sleep. He was again assessed after 2 weeks and his symptoms improved (BPRS scores were 97, 68 and 26 on 1st 2nd and 3rd visit respectively).

From the history, clinical features, laboratory examinations and resolution of symptoms within 4 weeks, in the absence any substance abuse, the patient being conscious and oriented throughout, and not having any history of previous psychiatric disorder or family history of psychiatric disorder, we gave a provisional diagnosis of Acute and Transient Psychotic disorder (according to ICD-10 criteria).

3. DISCUSSION

All the 3 cases described above had acute onset of psychosis and didn't have any previous history or family history of psychiatric disorders. No obvious abnormality was found in laboratory examinations, with only the 2nd cases having comorbid hypertension which was well controlled. Also, they didn't have history of use of any medication like corticosteroid, antiviral or hydroxychloroquine that can induce psychosis [9]. Substance induced psychosis can also be ruled out as none of them had such history with only the 1st case identified as an occasional smoker. These findings are similar to some previous findings [10,11] where the 1st episode psychosis cannot be attributed to any other etiology except COVID-19.

The most probable etiology of psychoses in these cases may be COVID-19 pandemic related psychosocial as well as COVID-19 infection related stress, as the stressful situation related to the pandemic were there in all the 3 cases [12]. However, stress and anxiety of the social and financial crisis due to the pandemic and fear of death were not severe enough except in the 3rd case. In some case reports, asymptomatic [13] and mild [11] COVID-19 cases were also followed by psychosis where stress was minimal or absent, and the possible cause were postulated as inflammatory response to COVID-19 [13]. Also, the neurotropism of the virus crossing the blood brain barrier [14,15] may be a possible etiology according to some researchers. But our in our cases, neither the inflammatory markers of these patients were raised, nor the brain neuroimaging had any abnormal finding. Again, facing job related and financial stress for more than two years since the pandemic started and the sudden onset of psychotic symptoms just after asymptomatic COVID-19 infection doesn't fit well, which should alarm the quest for more researches to find out whether only stress or anxiety are the possible etiologies or there are more to it.

Coming to the clinical findings, the primary psychotic symptoms in all the 3 cases were delusions and hallucinations except the 3rd case where hallucination was absent, which are a common feature in COVID-19 related psychotic disorders [16]. But we got a very rare finding, and also perhaps a novel finding in post COVID-19 psychosis which is Intermetamorphosis, one of the delusional misidentification syndromes, in the 3rd case.

We got excellent response to pharma-cotherapies with 2nd generation commonly used antipsychotics in our cases, same as some other studies [5,10,11]. Some studies showed that 1st episode of psychosis related to COVID-19 already accounted for cases of suicide [17,18], so it cannot be overemphasize that early diagnosis and treatment of new onset psychosis have several benefits by improving the outcome through reduction of duration of untreated psychosis, which improves the treatment response, global functioning and social skills, that again reduces the burden on the family and society as well as prevents the disease progression into a chronic disease like schizophrenia thereby decreasing the chances suicide [19,20].

4. CONCLUSION

First episode psychosis after COVID-19, not as much common as post-COVID-19 depression and anxiety disorders, but certainly can be one of the predominant neuropsychiatric sequelae of COVID-19, which may be induced by an asymptomatic COVID-19 infection also, and not by the symptomatic COVID-19 infections only. It's still uncertain, whether it is the direct effect of the virus itself or the stress and anxiety related to COVID-19 or some other factors play a role. With prompt diagnosis and treatment with commonly used antipsychotics, the prognosis seems to be good and the symptoms mostly resolve early. Individuals who had COVID-19 infection, even

those who were asymptomatic, must be screened and regular follow up should be done for any new onset psychiatric symptom that warrants the development of psychosis. More studies including prospective studies are required to ascertain the severity, nature, long term outcome of post-COVID-19 psychosis and the mechanism by which it can induce psychosis in a previously healthy individual.

DISCLAIMER

The products used for this research are commonly and predominantly uses products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors

CONSENT

As per international standard or university standard patients' written informed consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

ACKNOWLEDGEMENTS

We acknowledge the support of all staffs of Institute of Psychiatry and IPGME & R, Kolkata.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Coronaviridae Study Group of the International Committee on Taxonomy of Viruses. "The species severe acute respiratory syndrome-related coronavirus: classifying 2019-nCoV and naming it SARS-CoV-2". Nature Microbiology. 2020;5(4):536–544.
2. Taquet M, Geddes JR, Husain M, Luciano S, Harrison PJ .6-month neurological and psychiatric outcomes in 236379 survivors of COVID-19: a retrospective cohort study using electronic health records. Lancet Psychiatry. 2021;8(5):416-427.
3. Schou TM, Joca S, Wegener G, Bay-Richter C. Psychiatric and neuropsychiatric sequelae of COVID-19 - A systematic review. Brain, behavior, and immunity. 2021;97:328–348. Available:https://doi.org/10.1016/j.bbi.2021.07.01
4. Smith CM, Gilbert EB, Riordan PA, et al. COVID-19-associated psychosis: A systematic review of case reports. Gen Hosp Psychiatry. 2021;73:84-100. DOI: 10.1016/j.genhosppsych.2021.10.003.
5. Sunbul EA, Cavusoglu EC, Gulec H. Brief psychotic disorder during COVID-19 pandemic: A case series. Indian J Psychiatry. 2021;63(5):508-510. DOI: 10.4103/indianjpsychiatry.indianjpsychiatry_1130_20
6. Segev A, Hirsch-Klein E, Kotz G, et al. Trends of new-onset psychosis or mania in psychiatric emergency departments during the COVID-19 pandemic: A longitudinal comparative study. Sci Rep. 2021;11(1):21002. Published 2021 Oct 25. doi:10.1038/s41598-021-00310-w
7. Sheng B, Cheng SKW, Lau KK, et al. The effects of disease severity, use of corticosteroids and social factors on neuropsychiatric complaints in severe acute respiratory syndrome (SARS) patients at acute and convalescent phases. Euro Psychiat. 2005;20(3):236–242. DOI: 10.1016/j.eurpsy.2004.06.023.
8. "Classification of Omicron (B.1.1.529): SARS-CoV-2 Variant of Concern". World Health Organization (WHO); 2021. Retrieved 9 December 2021.
9. Correa-Palacio AF, Hernandez-Huerta D, Gómez-Arnau J, Loeck C, Caballero I. Affective psychosis after COVID-19 infection in a previously healthy patient: a case report. Psychiatry Res. 2020;290:113115. DOI: 10.1016/j.psychres.2020.113115. Epub 2020 May 21. PMID: 32512352; PMCID: PMC7240262.
10. Elfil M, Selby L, Van Schooneveld TC, Fadul N. Acute psychosis associated with recent SARS-CoV-2 infection: A case report. IDCases. 2021;24:e01140.

DOI:10.1016/j.idcr.2021.e01140
11. Smith CM, Komisar JR, Mourad A, Kincaid BR. COVID-19-associated brief psychotic disorder. BMJ Case Rep. 2020;13(8):e236940.
DOI: 10.1136/bcr-2020-236940. PMID: 32784244; PMCID: PMC7418683.
12. Van Winkel R, Stefanis NC, Myin-Germeys I. Psychosocial stress and psychosis. A review of the neurobiological mechanisms and the evidence for gene-stress interaction. Schizophr Bull. 2008;34(6):1095-105.
DOI: 10.1093/schbul/sbn101. Epub 2008 Aug 20. PMID: 18718885; PMCID: PMC2632486.
13. Ferrando SJ, Klepacz L, Lynch S, et al. COVID-19 psychosis: a potential new neuropsychiatric condition triggered by novel coronavirus infection and the inflammatory response? Psychosomatics. 2020;61:551–5
14. Rhea EM, Logsdon AF, Hansen KM, et al. The S1 protein of SARS-CoV-2 crosses the blood–brain barrier in mice. Nature Neuroscience. 2021;24:368–378.
15. Kreye J, Reincke SM, Prüss H. Do cross-reactive antibodies cause neuropathology in COVID-19? Nat Rev Immunol. 2020;20(11):645-646.
16. Parra A, Juanes A, Losada CP, Álvarez-Sesmero S, Santana VD, Martí I, et al. Psychotic symptoms in COVID-19 patients. A retrospective descriptive study. Psychiatry Res. 2020;291:113254.
DOI: 10.1016/j.psychres.2020.113254. Epub 2020 Jun 24. PMID: 32603930; PMCID: PMC7311337.
17. Xiang YT, Yang Y, Li W, et al. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. Lancet Psychiatry. 2020;7(3):228-229.
18. Goyal K, Chauhan P, Chhikara K, et al. Fear of COVID 2019: first suicidal case in India! Asian J Psychiatr. 2020;49:101989.
19. Fusar-Poli P, McGorry PD, Kane JM. Improving outcomes of first-episode psychosis: an overview. World Psychiatry. 2017;16(3):251-265.
DOI:10.1002/wps.20446.
20. Penttila M, Jaaskelainen E, Hirvonen N et al. Duration of untreated psychosis as predictor of long-term outcome in schizophrenia: Systematic review and meta-analysis. Br J Psychiatry 2014;205:88-94.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/87488