

Depression and COVID-Induced PTSD with Cognitive Symptoms after COVID-19 Illness

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Abstract

Many patients recovering from COVID-19 report persistent psychological and cognitive symptoms months after the virus has been eradicated. We investigated the relationship between depression and COVID-induced PTSD and cognitive symptoms after COVID-19 illness.

Methods: Patients who received COVID-19 treatment between March 26 and May 27, 2020 were polled three months later.

The following questions were used to assess cognitive symptoms: "Since your COVID-19 illness, do you now have more difficulty:

- 1) Do you remember conversations from a few days ago?
- 2) Do you remember where you put familiar objects?
- 3) Finding the right words to say?" Patients who agreed with at least one of these complaints were coded as having cognitive symptoms. Adjusting for demographic and clinical factors, logistic regression was used to estimate the association of depression (PHQ-8 10) and COVID-induced PTSD (PCL-5 30) with cognitive symptoms.

Results: Results showed that 44.4% of the 153 participants had at least one cognitive symptom, 18.3% were depressed, and 23.5% had COVID-induced PTSD. Adjusting for covariates, depression (OR 5.15, 95% CI 1.30-20.35, $p=0.02$) and COVID-induced PTSD (OR 3.67, 95% CI 1.13-11.89, $p=0.03$) were significantly associated with cognitive symptoms, as was a history of mental illness (OR 4.90, 95% CI 1.24-19.41, $p=0.02$).

Conclusions: Three months after acute COVID-19 illness, depression, COVID-induced PTSD, and prior mental illness were strongly associated with cognitive symptoms.

Keywords: • COVID-19 illness •Cognitive Symptoms
• Depression • Post-Traumatic Stress Disorder (PTSD)

Introduction

Although the respiratory system is the primary target of Coronavirus Disease 2019 (COVID-19), neurological manifestations are also common. Severe COVID-19 can cause encephalitis, vasculitis, and cerebrovascular disease. which can lead to long-term neurocognitive and neuropsychiatric problems [1]. Even mild-to-moderate infections can have a long-term impact on memory, attention, and concentration. The cause of this "COVID brain fog" is unknown, but it may be related to psychological distress

following COVID- 19 illness. As a result, we investigated the relationship between current depression and COVID-induced Post Traumatic Stress Disorder (PTSD) and cognitive symptoms in COVID-19 patients [2,3].

Methods

Patients who were treated for COVID-19 at Columbia University Irving Medical Center (CUIMC), either in the Emergency Department (ED) or on the inpatient wards, and discharged between March 26 and May 27, 2020, were eligible to participate. Participants were drawn from a registry of COVID-19 patients referred to a remote monitoring program after discharge [1-4].

Patients were surveyed three months later about the physical, psychological, and neurocognitive effects of their COVID-19 illness. Age 18 years, English or Spanish fluency, discharge home, and confirmed COVID-19 infection were all requirements for eligibility [4,5]. Patients with severe cognitive impairment who were unable to complete the study protocol were excluded. Telephone or online surveys in English or Spanish could be completed.

Bilingual staff handled enrollment and data collection, and Spanish versions of study instruments were professionally translated. The study was approved by the CUIMC Institutional Review Board, and all patients provided verbal informed consent. Based on the Cognitive Change Index, the survey included three questions: "Do you now have more difficulty since your COVID-19 illness:

- 1) Do you remember conversations from a few days ago?
- 2) Do you remember where you put familiar objects?
- 3) Finding the right words to say?

Patients who agreed with at least one of these complaints were coded as having cognitive symptoms. COVID-induced PTSD was evaluated using the PTSD Checklist for DSM-5 in conjunction with the COVID-19 illness (PCL-5, 30 positive) [2].

The 8-item Patient Health Questionnaire (PHQ-8, 10 positive) was used to assess current depression [3]. As covariates in regression modeling, self-reported demographics (age, gender, race, ethnicity, employment status), self-reported history of mental illness (depression, anxiety, PTSD), and chart-extracted clinical variables (length of hospitalization, level of care, intubation status) were used.

Descriptive statistics were used to compare the characteristics of patients with and without cognitive symptoms. The association of current depression and COVID-induced PTSD with cognitive symptoms was estimated using logistic regression, with covariates chosen a priori based on a literature review. SAS statistical software (v9.4, SAS Institute) was used for the analyses, with a two-sided alpha of 0.05.

Results and Discussion

Three months later, nearly half of the patients discharged home after COVID-19 illness reported cognitive deficits. Current depression, COVID-induced PTSD, and prior mental illness were all strongly associated with cognitive symptoms. Even among patients who did not require critical care, cognitive symptoms were common. Other studies describing cognitive deficits in young, otherwise healthy patients with brief COVID-19 hospitalizations support our findings. We extend these findings by showing that such cognitive symptoms are strongly linked to psychological distress [1,2]. Patients with concurrent depression had a five-fold increased risk of persistent cognitive symptoms, and patients with COVID-induced PTSD had a nearly four-fold increased risk. Given that cognitive impairment is a common feature of both depression and PTSD, it is possible that these

cognitive symptoms were manifestations of underlying depression and/or PTSD, exacerbated by the COVID-19 experience and its sequelae. Alternatively, cognitive symptoms could have been a direct neuropathogenic effect of COVID-19 or an indirect systemic derangement (e.g., hypoxia, inflammation, coagulopathy, cytokine storm) [3].

COVID-19 neuropsychiatric and neurocognitive symptoms are thought to develop through similar mechanisms [4], which may explain at least some of the robust associations observed here. Furthermore, the experience of COVID-19, hospitalization which frequently involves invasive procedures, prolonged sedation, social isolation, and a real or perceived threat of mortality may contribute to immediate or delayed neuropsychiatric repercussions via sympathetic system activation, stress hormone release, traumatic memory formation, or other unrecognized factors [5]. A better understanding of the mechanistic relationship between COVID-19's psychological and cognitive sequelae will necessitate detailed neuropsychological assessments to confirm self-reported symptoms, as well as neuroimaging for clinical correlation, neither of which is routinely performed following COVID-19.

The diverse population and use of validated psychological instruments for assessing current depression and COVID-induced PTSD were studied. It should be interpreted with caution because it may not be applicable to all post-COVID patients. Because cognitive symptoms were not determined represent

true cognitive impairment. The lack of data on pre-existing cognitive disorders and delirium during the COVID-19 illness may have confounded the observed associations. Because only a few patients required ICU admission or intubation, the findings may not be applicable to the most severe cases of COVID-19.

To better characterize the predictors, duration, and consequences of COVID-related cognitive symptoms, larger prospective studies with repeated assessments and longer follow-ups are required. Our findings contribute to the growing body of knowledge about COVID-19's long-term neurocognitive and neuropsychiatric effects. While our prevalence estimates should be interpreted with caution due to the convenience of our sample, the high frequency of cognitive and psychological symptoms observed months after non-critical COVID-19 illness emphasize the importance of comprehensive neurocognitive testing and depression/PTSD screening as part of standard post-COVID care [3].

Furthermore, the strong link between depression and COVID-induced PTSD and cognitive symptoms suggests that better detection and treatment of such psychological symptoms could improve cognitive outcomes in COVID-19 patients. Through formal neuropsychological testing, they may strengthen. The cross-sectional design, small sample size, and low participation rate were all limitations.

References

1. Helms, Julie, et al. "Neurologic features in severe SARS-CoV-2 infection." *N. Engl. J. Med.* 382.23 (2020): 2268-2270.
2. Vickers, Neil J. "Animal communication: when i'm calling you, will you answer too?." *Curr. biol.* 27.14 (2017): R713-R715.
3. Ritchie, K., et al. "The cognitive consequences of the COVID-19 epidemic: collateral damage?." *Brain communications* 2.2 (2020): fcaa069.
4. Pechtner, V, et al. "A new approach to drug therapy: Fc-fusion technology." *Prim. Health Care: Open Access* 2017;7(1):1-5.
5. Vickers, Neil J. "Animal communication: when i'm calling you, will you answer too?." *Curr. biol.* 27.14 (2017): R713-R715.

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