

Incidence of Post-Traumatic Stress Disorder after Coronavirus Disease

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Research article

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Abstract

Background

There was an outbreak of coronavirus disease (COVID-19) in Daegu, the Republic of Korea, in 2020. We investigated the prevalence of post-traumatic stress disorder (PTSD) among patients with COVID-19 who were treated and discharged at a university hospital in Daegu, Korea.

Methods

A total of 64 patients who were diagnosed with COVID-19 and hospitalized, treated, and discharged from a university hospital between February and April 2020 participated to our study. We conducted a phone interview and evaluated the presence of PTSD using the PTSD checklist (PCL-5) from the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; score range: 0 to 80). If a score ≥ 33 was obtained, then a diagnosis of PTSD was rendered.

Results

Thirteen patients scored ≥ 33 on the PCL-5, which indicated that 20.3% (13/64) of the patients had PTSD. No statistically significant differences in the demographic data, including sex, age, hospitalization time, and duration after discharge, were observed between the patients with PTSD and those without PTSD.

Conclusions

We found that 20% of patients with COVID-19 who were hospitalized, treated, and discharged had PTSD. Accordingly, clinicians should be aware of the high possibility of PTSD among COVID-19 patients and mental health support among the infected patients should be provided.

Background

The coronavirus disease (COVID-19), which originated in Wuhan, China, in December 2019 reached the level of a pandemic in March 2020 with an incidence rate that has not decreased even after several months. Young individuals infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) generally show milder respiratory symptoms than aged patients with COVID-19 [1]. Additionally, older adults (aged 60 or older) with COVID-19 are likely to have massive alveolar damage and progressive respiratory failure, leading to a mortality rate greater than 10%. The mortality rate drastically increases with age in people aged 60 years and older [2, 3].

Patients who contract COVID-19 experience an infection that could result in death. This may be a traumatizing experience and could cause psychiatric symptoms. Post-traumatic stress disorder (PTSD) is

an anxiety disorder that occurs subsequent to experiencing trauma, such as a severe accident or violence [4]. The emotions, memories, and thoughts that occurred during the traumatizing experience recur in the patient, leading to inconveniences and restrictions on their daily lives [4]. PTSD can also lead to escapism, self-abuse, social phobia, self-destruction, and addiction [5]. Experiencing life-threatening infectious diseases could traumatize the patient resulting in the development of PTSD. Hence, PTSD may occur in patients infected with SARS-CoV-2. For previous disease outbreaks, the prevalence of PTSD in the general population after experiencing a serious infectious disease ranged from 4–41%. [6].

Although a high prevalence of PTSD is expected among patients infected with SARS-CoV-2, only a few studies have addressed this important issue [7–10]. There was a massive COVID-19 outbreak in Daegu, Korea, between February and April 2020 [11]. Of the total population of Daegu, which is approximately 2.5 million, nearly 6,200 people were infected with SARS-CoV-2 during this period.

We aimed to determine the prevalence of PTSD and investigate its risk factors among patients with COVID-19 who were treated and discharged at a university hospital in Daegu, Korea.

Methods

Patients

We recruited 107 patients who were diagnosed with COVID-19 and hospitalized, treated, and discharged from a university hospital in Daegu, Korea between February and April 2020. All patients had received a diagnosis confirmed through reverse transcription polymerase chain reaction (RT-PCR; Allplex™ 2019-nCoV Assay, Seegene, South Korea) using pharyngeal swabs at the hospital. The patients were treated with either hydroxychloroquine sulfate (Oxiklorine®; 400 mg qd per day) alone or a combination of hydroxychloroquine sulfate (Oxiklorine®; 400 mg) and lopinavir/ritonavir (400 mg/100 mg bid per day; Kaletra®). After improvement of symptoms, the patients were discharged upon meeting the following criteria: no fever was present without the administration of antipyretics and the results of PCR tests performed twice at a 24-h interval were negative. The presence of PTSD was investigated through a telephone interview. Of the 107 patients, 43 had missing contact information, did not answer the phone, or refused to undertake the telephone interview. The remaining 64 patients completed a telephone interview to gather additional information on PTSD. The demographic data of these patients were identified through chart reviews completed during the interview and included information on sex, age, hospitalization time, and post-discharge duration.

PCL-5

To evaluate the presence of PTSD, the PTSD checklist (PCL-5) from the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) was used [12]. PCL-5 contains 20 items rated on a five-point Likert-type scale, with scores ranging from “Not at all” (0) to “Extremely” (4), resulting in a symptom severity

score between 0 and 80. For the current study, if a score of ≥ 33 was obtained, then a diagnosis of PTSD was rendered.

Statistical Analysis

We analyzed the association between the presence of PTSD and demographic and clinical data using Mann–Whitney U and chi-square tests. The acceptable statistical significance was set at $p < 0.05$. All statistical analyses were conducted using IBM SPSS Statistics for Windows, version 23.0 (IBM Corp., Armonk, NY, USA).

Results

Of the 64 patients who participated in the interview, 13 scored ≥ 33 on the PCL-5, which indicated that 20.3% (13/64) of the patients had PTSD. No statistically significant differences in the demographic data (sex, age, hospitalization time, and duration after discharge) were observed between the patients with PTSD (PTSD+ group) and those without PTSD (PTSD- group; Table 1).

Table 1
Characteristics of study participants based on the presence of Post-Traumatic Stress Disorder

	PTSD+	PTSD-	P	Total
Number of patients (n)	13	51		64
PCL-5 score	46.0 \pm 11.9	9.6 \pm 7.6	< 0.001	17.0 \pm 17.1
M:F (n)	4:9	24:27	0.291	28:36
Age (years)	57.8 \pm 15.2	53.9 \pm 17.0	0.526	54.7 \pm 16.6
Admission duration (days)	35.7 \pm 21.3	30.1 \pm 17.2	0.499	31.2 \pm 18.1
Duration after discharge (days)	69.8 \pm 25.4	77.2 \pm 18.4	0.457	75.7 \pm 20.0
PTSD: Post-traumatic stress disorder; M: male; F: female				
PTSD+: Patients with PTSD				
PTSD-: Patients without PTSD				

Discussion

In our study, we found that approximately 20% of patients who were infected by SARS-CoV-2 and were admitted to the hospital experienced PTSD. However, sex, age, duration of admission, and the duration between discharge and the interview were not associated with the development of PTSD.

A study conducted by Park et al. on 63 of 148 patients who developed Middle East respiratory syndrome (MERS) and survived in Korea reported that PTSD occurred in 42.9% of the patients 1 year after a full

recovery [13]. Regardless of the severity of the infection, the PTSD risk was higher for cases in which the survivors perceived high social stigma against infected patients or had increased anxiety levels [13]. Another report showed that 42% of Chinese patients who were infected with SARS experienced PTSD even after 4 years. The incidence of PTSD after COVID-19 (20%) is lower than that after MERS or SARS [14]. Although this could be explained by differences in the duration between the outbreak and the investigation of the presence of PTSD, it is also possible that the lower mortality rate (2–5%) for individuals with PTSD due to COVID-19 compared with the higher rates (10–20%) in MERS or SARS, could have affected the lower incidence of PTSD in COVID-19 [15].

During the COVID-19 pandemic, several studies are being performed on the incidence of PTSD [7–10]. In April 2020, Fekih-Romdhane et al. [7] investigated the presence of PTSD in 603 Tunisian people and reported that 33% of the participants had PTSD. Liu et al. [9] found similar results (31.8%) while evaluating the incidence of PTSD in 898 American young adults between April 13, 2020 and May 19, 2020. Forte et al. [8] investigated the presence of PTSD in 2,286 Italians during the massive COVID-19 outbreak in Italy and found that PTSD was present in 29.5% of the participants. Lastly, Wang et al. [10] evaluated 202 nurses exposed to COVID-19 in Hubei, China, and reported that 16.8% of them had PTSD.

However, these studies included both individuals who were not diagnosed with COVID-19 and those who were. In contrast, our study exclusively included patients who were diagnosed with COVID-19 and were hospitalized, treated, and discharged. To the best of our knowledge, this is the first such study on the incidence of PTSD among COVID-19 patients.

The current study has a few limitations. First, the sample size was small. Second, other psychiatric symptoms including depression, anxiety, and sleep disorders were not evaluated. Finally, several variables that could be potential risk factors for PTSD, such as history of mental illness, characteristics, and social supports, were not investigated. Therefore, further studies are needed to overcome and account for these limitations.

Conclusion

In the present study, a PTSD incidence of 20% was found in patients with COVID-19 who were discharged after a full recovery following treatment. PTSD may prevent patients from living their lives normally and could elicit mental disorders such as depression, schizophrenia, and alcohol addiction. Thus, clinicians should be aware of the possibility of PTSD among COVID-19 patients and should provide appropriate treatment to individuals who present with relevant symptoms. In particular, there is a moderate risk for PTSD in COVID-19 patients who have been discharged following a full recovery, warranting its detection through active inquiry and appropriate subsequent treatment.

Abbreviations

COVID-19; coronavirus disease, PTSD; post-traumatic stress disorder, SARS-CoV-2; severe acute respiratory syndrome coronavirus 2, MERS; Middle East respiratory syndrome.

Declarations

Ethic approval and consent to participate

The study protocol was approved by the ethics committee of Yeungnam University Hospital. Individual informed consent was waived by the ethics committee listed above because this study used currently existing sample collected during the course of routine medical care and did not pose any additional risks to the patients. Informed consent about study participation was officially announced by mail and poster. All patient data were anonymized prior to the analysis.

Consent for publication

Not applicable

Availability of data and material

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

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None

Author`s contributions

DP and MCC created the research data and wrote the draft of the manuscript. All authors read, made significant edits to the first version, and approved the final manuscript.

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Not applicable

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