

LETTER



High prevalence of acute stress disorder and persisting symptoms in ICU survivors after COVID-19

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Dear Editor,

Post-traumatic stress disorder may surge following exposure to life-threatening events and affects around 20% of intensive care unit (ICU) survivors [1, 2]; a higher rate (38.8%) was observed in Middle East and Severe Acute Respiratory Syndromes' outbreaks [3]. The coronavirus disease 19 (COVID-19) pandemic [4] presents all the features to deeply impact not only on physical but also on mental health: patients are isolated from their families, communication with healthcare providers is difficult because of personal protective equipment and discrepancy between patients' number and staff members is evident. A significant psychological impact on general population and healthcare providers was demonstrated [5].

In a follow-up hospital visit, 47 patients (males 70.2%, 59 [50–66] year-old) admitted to our ICU for COVID-19 from February 21st to June 5th, 2020 (Fig. 1 ESM) were assessed in person by an intensivist at least 1 month after hospital discharge [median time 72 [55–92] days]. Informed consent was collected following the ad hoc procedures defined by the Ethics Committee for COVID-19 pandemic. The Impact of Event Scale–Revised (IES-R–Table 1 ESM) was used to screen for acute stress disorder (ASD), defined by a score ≥ 33 . Median IES-R score was 30 [19–41]; 19 patients (40.4%) showed ASD. Among subscales, intrusion average score was higher than avoidance (1.6 [1–2.4] vs. 1.25 [0.8–1.8]; $p=0.0660$); both

were higher than hyperarousal (0.9 [0.3–1.3]; $p<0.0001$ and $p=0.0114$). No significant difference in patients' characteristics, length of stay in ICU/hospital, need and length of invasive/non-invasive ventilation and drugs was observed comparing ASD and non-ASD patients (Table 1). ASD patients were less hypoxicemic at ICU admission; we can just speculate that, being less dyspnoeic, they possibly had more clear-headed experiences of their own condition and of the surrounding environment, including other patients' struggle and death. Patients with IES-R score higher than 30 were addressed to outpatients' facilities of their catchment area, to receive an accurate diagnosis and psychotherapy/medication, if necessary.

Anosmia, ageusia, altered hearing and balance persisted in 10.6%, 19.2%, 10.6% and 19.2%, respectively. Asthenia and dyspnoea were scored with a 1–5 range. Asthenia persisted in 97.8% of patients (median score 2 [1–3]). Four patients (8.5%) complained of dyspnoea at rest, two required home oxygen therapy. Patients complaining of dyspnoea for mild, moderate and severe efforts were 13 (27.7%), 46 (97.8%) and 46 (97.8%), respectively. The number of patients complaining of dyspnoea in each of these classes did not differ significantly in ASD and non-ASD patients; however, dyspnoea score was higher in ASD patients (Table 2 ESM).

Most of the patients had unclear memories of ICU stay; the most common complaint was the feeling of complete isolation due to limited possibility to communicate with families/physicians. Many patients described nightmares, feeling of derealization and the initial belief of being in a fake hospital; this mainly affected the first patients of the pandemic. 10 patients (21.3%–ASD 4 (21.1%) vs.

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Table 1 Features of the patients discharged from ICU after COVID-19 with and without acute stress disorder

	Overall (n = 47)	No ASD (n = 28)	ASD (n = 19)	p value
Age—years, median [IQR]	59 [50–66]	60.5 [50.5–67]	57 [50–65]	0.4540
Sex—males, n (%)	33 (70.2)	22 (78.6)	11 (57.9)	0.195
BMI—kg/m ² , median [IQR]	27.7 [25.4–30.7]	27.3 [25.4–31]	27.7 [25.1–30.7]	0.5543
SAPS II—median [IQR]	31 [27–45]	34 [26–48]	30.5 [27–39.5]	0.3109
Past medical history of psychiatric diseases—n (%)	2 (4.3)	0 (0.0)	2 (10.5)	0.079
FiO ₂ at ICU admission—median [IQR]	0.8 [0.6–1]	1 [0.7–1]	0.6 [0.6–1]	0.0734
PaO ₂ /FiO ₂ at ICU admission—mmHg, median [IQR]	123 [84–159]	100 [82–130]	142 [121–195]	0.0114
Length of stay in hospital before ICU—days, median [IQR]	3 [1–8]	3 [1.5–7.5]	3 [0–8]	0.6942
Length of stay in ICU—days, median [IQR]	24 [10–37]	25.5 [11–40.5]	19 [9–37]	0.2828
Length of stay in hospital after ICU—days, median [IQR]	9 [6–15]	9 [6–14]	12 [6–21]	0.4712
Length of CPAP before ICU admission—days, median [IQR]	2 [1–5]	3 [1–5]	1 [1–8]	0.6927
Invasive mechanical ventilation in ICU—n (%)	34 (72.3)	21 (75)	13 (68.4)	0.621
Length of IMV—days, median [IQR]	17.5 [9–28]	17 [11–30]	18 [7–25]	0.3293
Length of NMBA—days, median [IQR]	7 [3.5–11.5]	7 [6–12]	5 [3–11]	0.2163
Pronation—n (%)	19 (40.4)	11 (39.3)	8 (42.1)	0.773
Benzodiazepine sedation in ICU—n (%)	23 (48.9)	16 (57.1)	7 (36.8)	0.238
Dexmedetomidine sedation in ICU—n (%)	23 (48.9)	13 (46.4)	10 (52.6)	0.770

ASD acute stress disorder; IQR Interquartile range; BMI Body mass index; SAPS II Simplified acute physiology score; CPAP continuous positive airways pressure; ICU intensive care unit; PEEP positive end-expiratory pressure; PaO₂ arterial partial oxygen pressure; FIO₂ fraction of inspired oxygen; IMV invasive mechanical ventilation; NMBA neuromuscular blocking agents

non-ASD patients 6 (21.4%); $p = 0.975$) wanted to see the ICU, both to meet the ICU staff and to help their memories' reconstruction process.

In conclusion, ASD prevalence is high among ICU survivors after COVID-19; a systematic screening should be performed to reduce chronic effects of critical illness. Symptoms of asthenia and dyspnoea for moderate efforts persist for weeks after ICU and hospital discharge in a large majority of the patients.

Supplementary Information

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