Three-Month Health Consequences in COVID-19 Critical Care Patients: Results from a Cohort Follow-Up Study



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INTRODUCTION

Long-term consequences of ICU COVID-19 patients are not completely known. Aim of this work is to describe three-month outcomes in a cohort of covid-19 ICU patients.

RESULTS

A total of 111 patients were enrolled, 4 patients died after discharge and 17 were lost to follow-up. Finally 90 patients were evaluated three months after discharged from ICU. As shown in table 1, 76% of patients were men, with an average age of 60 yo and an elevated median BMI of 28,8 kg/m2. All patients belonged to the three first categories of CFS at pre-admission and the 48% of them didn't worsen their CFS at three months (see Graphic 1). In a multivariate analysis only pre-admission Charlson Index, a score that correlates 10-year survival with age and comorbidities, is associated with relative increase of CFS (p < 0.001). The analysis of functional, respiratory and neuropsychological patients' status, shows that 39% of them presented deficits in muscular strength, 64% impaired their functional capacity and 41% had persistent respiratory alterations (see Graphic 2). At least one neuropsychological test was pathological in 39% of patients. Selfreported quality of life was more than 70% in 63% of patients (see Graphic 3) and in a multivariate analysis no variable is associated with this data except mMRC scale (p = 0.0019).



GRAPHIC 2. Overall representation of three month patients' problems.



METHODS

In this prospective observational study, we enrolled all patients admitted to ICU of San Gerardo Hospital in Monza (Italy) from March to December 2020, with a diagnosis of COVID-19 related pneumonia, received mechanical ventilation for more than 72 hours and than successfully discharged from ICU. We recorded preadmission Clinical Frailty Scale (CFS) and Charlson Comorbidity Index. Three months after ICU discharge, we assessed functional, respiratory and neuropsychological patients' status. Functional capacity was investigated using CFS, Short Physical Performance Battery (SPPB), 6 Minutes Walking Test (6MWT), Medical Research Council (MRC) Scale, Handgrip Strength Measurement. Respiratory function was evaluated with Pulmonary Function Test, chest X-Ray, modified MRC (mMRC) dyspnea score. Neuropsychological status was performed using Hospital Anxiety and Depression Scale (HADS), Post-Traumatic Symptom Scale (PTSS-10), Montreal Cognitive Assessment test (MoCA). A self-reported quality of life was estimated using Euroquality Five Levels Five Dimensions (HQ5D).



GRAPHIC 1. Lost of points in CFS at three month from ICU discharged. Histogram's colors represent preadmission CFS CFS: Clinical Fraility Scale

Pre-admission characteristics	
Age (yrs)	60+11
Sex M/F (%)	76/24 %
BMI (kg/m2) (median + IQR)	28,8 + 5,2
Active workers (%)	(60) 67%
Pre-admission CFS	1-Very Fit: 15 (17); 2-Well: 61 (66); 3-Managing Well: 14 (16)
Three-Months Outcome	
Resume previous job (Among previously employed)	Full: 36 (60); Not Fully: 20 (33); No: 4 (6)
CFS worsening at three Months	0 points: 44 (48); 1 points: 32 (36); 2 points: 9 (11); 3 points: 3 (3); 4 points 0 (0); 5 points: 2 (2)
Muscular Strength	
Handgrip < 20/30	28 (32)
MRC < 57	15 (17)
Functional Capacity	
mMRC > 1	30 (34)
6MWT < 400 m	20 (22)
Sat. O2 < 91% during 6MWT	22 (25)
SPPB < 10	25 (28)
Neuropsychological outcome	
HADS-A > 7	13 (15)
HADS-D > 7	13 (15)
PTSS-10 > 30	3 (3)
MoCA < 24	22 (25)
Respiratory Alteration	
FEV1 < 80%	11 (12)
Reticular opacities on chest X-Ray	29 (32)
Quality of life	
HQ5D-VAS (%)	100%: 8 (9); >90%: 17 (9); >80%: 38 (42); >70%: 57 (63)

self reported quality of mesured with HQ5D-VAS . Median 80 HQ5D: Euroquality Five

DISCUSSION AND CONCLUSION

Functional, respiratory and neuropsychological sequelae are present in a significant part of our ICU COVID-19 patients at 3 months from discharge. On the other hand however the half of them doesn't worsen his frailty and the most part of previously employed is able to resume the previous job. No measured variable is independently associated with self-reported quality of life except age and self-reported dyspnea. Further evaluations and longer follow-up programs are needed for patients' clinical monitoring.

TABLE 1. Pre-admission patients characteristic and 3 Months Outcome. BMI: Body Mass Index; CFS: Clinical Frailty Scale; MRC: Medical Research Council; 6MWT; & Minute Walking Test; SPPB: Short Physical Performance Battery; mMRC: Modified Medical Research Council; HADS-A: Hospital Anxiety Depression Scale – Anxiety; HADS-D; Hospital Anxiety Depression Scale – Depression; PTSS-10: Post-Traumatic Symptom Scale - 10; MoCA: Montreal Cognitive Assessment; FEV1: Forced Expired Volume; HQ5D: Euroquality Five Dimensions. If not otherwise specified, data are represented ad n(%).