

Effect of SARS-CoV-2 Vaccination in a Frailty COVID-19 Cohort: a Real Life Experience in a Northern Italy Hospital

Chiara Russo^{1,2}, Luca Tagliafico³, Laura Labate^{1,2}, Marta Ponzano¹ Michele Mirabella², Federica Portunato², Carmen Bellezza⁴, Sara Mora⁵, Alessio Signori², Eleonora Arboscello⁴, Fiammetta Monacelli³, Alessio Nencioni³, Mauro Giacomini⁵, Chiara Dentone², Matteo Bassetti^{1,2}

1 Department of Health Sciences (DISSAL), University of Genoa – Genoa, Italy, 2 Infectious Diseases Unit, Policlinic San Martino Hospital, IRCCS – Genoa, Italy, 3 Department of Internal Medicine (DIMI), Geriatric Clinic, 4 San Martino Hospital, IRCCS – Genoa, Italy, 5 Department of Informatics Bioengineering, Robotics, and Systems Engineering (DIBRIS), University of Genoa – Genoa, Italy

Presenting author:
Chiara Russo
chiara.russo16@icloud.com

1265979

Background

Clinical trial demonstrated that SARS-CoV-2 vaccines have the ability of reducing mortality and morbidity due to COVID-19.

The aim of this study is to describe the effect of vaccination in terms of mortality at 30 days, different types of ventilation and ICU admission among patients hospitalized for COVID-19.

Methods

Retrospective, single-center study conducted at San Martino Hospital (Genoa, Italy), including patients ≥ 18 years hospitalized for COVID-19 from 1st May 2021 to 31st December 2021. Demographical, clinical and laboratory data, multimorbidity and disability score were collected and vaccinated (group A) and not-vaccinated (group B) patients were compared. The impact of vaccination on mortality, ICU admission and Oxygen need was studied using Cox proportional hazards and logistic regression models after calculating the propensity scores.

Results

Overall, 403 patients SARS-CoV-2 infected were enrolled. Data about timing of vaccination were available for 395 patients (98%). Among 395 patients hospitalized with COVID-19, 62% were not vaccinated. Patients in group A (38%) were older, more disable (lower Barthel index, BI) and with higher multimorbidity (higher cumulative illness rating scale, CIRS) than patients in group B (62%). After weighting observations, we didn't find statistically significant differences in terms of 30-days mortality among the two groups (HR 0.83, CI95% 0.49-1.40, $p=0.483$). Comparing vaccinated versus non-vaccinated patients, we found a lower rate of ICU admission (HR 0.23, CI95% 0.05-0.97, $p=0.046$) and oxygen requirement (HR 0.33, CI9% 0.14-0.75, $p=0.0008$) among vaccinated patients. Looking at the baseline characteristics (age, sex, disability and multimorbidity index, BMI), we found older age and higher CIRS as variable associated to 30-days mortality also at the multivariable analysis (respectively, $p=0.001$, $p<0.001$).

Table 1 Demographic and clinical characteristics of the patients at hospitalization

	Total N=395	Not Vaccinated N=245 (62.03%)	Vaccinated N=150 (37.97%)	Std Diff
Baseline Characteristics				
Male sex, N (%)	234(59.24%)	150(61.22%)	84(56.00%)	0.106
Age, mean (SD)	68.94(16.07)	63.94(16.02)	77.11(12.41)	-0.919
CIRS, median (IQR)	5(2-9)	3(1-7)	8(4-11)	-0.865
BI, median (IQR)	95(44.5-100)	100(68.5-100)	70(25.5-100)	0.546
BMI ≥ 30 , N (%)	87(22.03%)	67(27.35 %)	20(13.33%)	0.353
Diabetes, N (%)	67(16.96%)	35(14.29%)	32(21.33%)	-0.184
Lab Baseline Characteristics				
CRP, median (IQR)	65(24-110)	57.5(22.9-99.2)	74.25(29.8-134)	-0.254
D-dimer, median (IQR)	944.5(536-1716)	847.4(489.4-1416)	1110.5(689-2104.5)	-0.115
WBC, median (IQR)	7.17(5.11-9.79)	6.8(4.72-9.37)	7.81(5.65-10.5)	-0.158
Lymphocytes absolute value, median (IQR)	0.81(0.58-1.09)	0.83(0.58-1.11)	0.8(0.57-1.06)	0.035
PLT, median (IQR)	193(151-265)	192(150-263)	197.5(155-268)	0.054
Ferritin, median (IQR)	512(232-916.1)	586(288-1025)	355(180-675)	0.365
LDH, median (IQR)	291(233-387)	314(257-402)	261.5(218-334)	0.232
AST, median (IQR)	33(23.2-52)	41(27-58.4)	27 (20-36)	0.248
ALT, median (IQR)	30(21-47)	35(24-56)	23(18-35)	0.367
Creatinine, median (IQR)	1.0(0.8-1.27)	0.9(0.8-1.1)	1(0.8-1.4)	-0.317
IL6, median (IQR)	35.7(17.5-71.8)	32.6(16-60.9)	40.84(21.6-86.6)	-0.092

Conclusion

Our results seem to confirm that vaccination is protective against hospitalization, since in our cohort vaccinated patients were 38% of the total.

Looking at 30-days mortality, we did not find a statistically significant reduction in mortality among the two groups of patients. We think this is due to the different baseline characteristics of patients in two groups, since vaccinated patients were older and with more disability and multimorbidity. This is in line with the result of multivariable analysis, where older age and higher CIRS were the two variables associated with 30-days mortality.