COVID-19 in a Veterans Affairs Hospital at Suffolk County, Long Island, New York

To the Editor:

Since the first cases were reported in December 2019, infection with the severe acute respiratory coronavirus 2 (SARS-CoV-2)—a novel virus—has become a worldwide problem affecting people's lives and livelihood. The coronavirus disease 2019 or COVID-19, the illness caused by SARS-CoV-2, has overwhelmed health care systems globally. The World Health Organization declared COVID-19 to be a pandemic on March 11, 2020.[1] The pandemic was first heralded in the United States in Washington State involving an outbreak in a skilled nursing facility, but New York and its boroughs became the COVID-19 epicenter in the nation by late March 2020.[2,3] Sadly, the United States has the most confirmed infections of SARS-CoV-2 in the world, over 5 million currently as this manuscript is being written.[4] We report our experience with hospitalized COVID-19 cases from March to May 2020 in our hospital located in Long Island, New York.

We retrospectively reviewed the medical charts of Veterans who tested positive for SARS-CoV-2 on admission from March 1 to May 30, 2020, at Northport Veterans Affairs Medical Center. Of 141 Veterans who had laboratory confirmed SARS-CoV-2 infection via nasopharyngeal reverse transcription polymerase chain reaction (RT-PCR), 67 were hospitalized. Twenty of 67, or 30%, died. The median age of the hospitalized cohort was 73 years (range, 33–94 years). Figure 1 shows the dates of the tests. Tables 1 and 2 summarize the demographic characteristics, medical history, and laboratory findings. No coinfection of COVID-19 with other respiratory viruses was identified. The deceased group was older (77.5 vs 71 years; $P = 0.007$); had lower oxygen saturation and higher respiratory rate on presentation; had longer length of stay ($P = 0.091$); is more likely to be in the intensive care unit (ICU) and intubated; had lower bicarbonate levels; had higher simplified acute physiology score II (SAPS II) ($P < 0.001$); had higher lactate dehydrogenase, blood urea nitrogen, and potassium levels; and had higher peak procalcitonin, C-reactive protein (CRP), ferritin, and erythrocyte sedimentation rate (ESR) levels. There was no difference between recovered and deceased patients in terms of comorbidities except atrial fibrillation. Also, no statistical difference in the use of angiotensin-converting enzyme inhibitors, statins, famotidine, hydroxycholoroquine (HCQ), azithromycin, doxycycline, or steroids was noted (see Table 1). β-Lactam antibiotics and tocilizumab were given more frequently in the deceased group. Hydroxycholoroquine was stopped in 1 patient after 2 days due to QTc interval prolongation, which was recognized on daily performed electrocardiogram. No bacteremias were identified in the recovered group contrary to 2 occasions in the deceased, caused by *Enterococcus faecalis* and *Streptococcus mitis.* Six cases of pneumonia were identified in intubated deceased patients (3 had received steroids and 1 tocilizumab) and 4 in the recovered (2 intubated/steroids and 1 tocilizumab). Twelve recovered patients had persistent positive nasopharyngeal RT-PCR for SARS-CoV-2 for average 29 days (14 to 79 days), and 3 of them were checked and had detectable SARS-CoV-2 IgG antibody.

Our results mirror the findings from other published analyses. Zhou et al[5] (from Wuhan, China) also reported increased odds of in-hospital COVID-19–related death with older age, higher sequential organ failure assessment score (we used SAPS II score), and higher D-dimer. Their longer observed duration of persistent positive RT-PCR in survivors was 37 days. In a large case series (5700 patients) of sequentially hospitalized patients with COVID-19 from New York, increased mortality rate was noted in older ventilated patients and mostly men.[6] As many of our colleagues in New York in the beginning of this pandemic, we used HCQ widely. Although our cohort was not large enough to make any definitive conclusions, but like other larger studies, we did not see benefit from using HCQ.[7,8] Therefore, in our medical center (as well as in our academic affiliate), the recommendation for treatment of hospitalized patients with COVID-19 with HCQ was removed. We could not use remdesivir for a significant period as the company stopped the compassionate use program; thus, we did not have access to it.

Desperate measures and treatment approaches took place during this raging pandemic, which is completely understandable. As science and randomized trials continue to provide and information and guidance regarding management of COVID-19, we are confident to be better prepared should we face a new surge of cases in the future.

Aikaterini Papamanoli, MD
Department of Infectious Diseases
Stony Brook University Hospital
Stony Brook
New York, NY

Zeena Lobo, MD
George Psevdos, MD
Division of Infectious Diseases
Northport Veterans Affairs Medical Center
Northport, NY
george.psevdos@va.gov

The authors have no conflicts of interest to disclose.

REFERENCES

1. Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. *Acta Biomed*. 2020;91:157–160.
2. McMichael TM, Currie DW, Clark S, et al. Epidemiology of COVID-19 in a long-term care facility in King County, Washington. *N Engl J Med*. 2020; 383:2005–2011.
3. Gross SA, Robbins DH, Greenwald DA, et al. Preparation in the big apple: New York City, a new epicenter of the COVID-19 pandemic. *Am J Gastroenterol*. 2020;115:801–804.
4. COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). Available at: https://coronavirus.jhu.edu/map.html. Accessed August 12, 2020.
5. Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*. 2020;395:1054–1062.
6. Richardson S, Hirsch JS, Narasimhan M, et al. Presenting characteristics, comorbidities, and outcomes among 5700 patients hospitalized with COVID-19 in the New York City area. *JAMA*. 2020;323:2052–2059.
7. Geleris J, Sun Y, Platt J, et al. Observational study of hydroxychloroquine in hospitalized patients with COVID-19. *N Engl J Med*. 2020;382:2411–2418.
8. Magagnoli J, Narendran S, Pereira F, et al. Outcomes of hydroxychloroquine usage in United States veterans hospitalized with COVID-19. *Med (N Y)*. 2020. doi:10.1016/j.medj.2020.06.001.

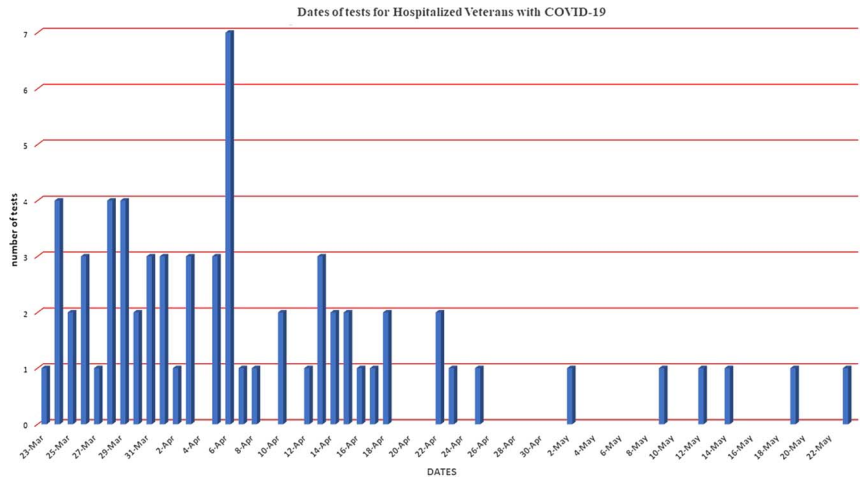

FIGURE 1. Dates of positive SARS-CoV-2 PCR tests.

TABLE 1. Demographic, Medical History, and Presentation Data of Patients Hospitalized With COVID-19

	COVID-19 Recovered, n = 47	COVID-19 Deceased, n = 20	*P*
Median age (range), y	71 (33–92)	77.5 (55–94)	0.007*
Men, n	46	20	
White, n (%)	25 (53%)	15 (75%)	0.111
Black, n (%)	16 (34%)	5 (25%)	0.571
Hispanic, n (%)	6 (13%)	0	
Cough, n	25	12	0.789
Dyspnea, n	30	11	0.587
Median temperature (range), °F	100.1 (95.5–103.2)	99.9 (98.1–104)	0.783
Median SBP (range), mm Hg	125 (77–192)	123 (74–174)	0.563
Median heart rate (range), beats/min	96 (65–151)	99 (53–130)	0.747
Median respiratory rate, breaths/min	20 (16–38)	22 (18–39)	0.021*
BMI (range)	30 (21–48)	28.5 (16–47)	0.577
Oxygen saturation on room air, %	92 (82–98)	88 (70—97)	0.014*
Diabetes, n (%)	19 (41%)	10 (50%)	0.594
Hypertension, n (%)	36 (76%)	16 (80%)	1.000
CHF, n (%)	5 (11%)	4 (20%)	0.436
COPD, n (%)	11 (24%)	6 (30%)	0.760
CAD, n (%)	13 ((28%)	10 (50%)	0.101
Hemodialysis, n (%)	3 (6%)	3 (15%)	0.357
Atrial fibrillation, n (%)	5 (11%)	8 (40%)	0.015*
Active malignancy	(1) Chronic lymphocytic leukemia	(1) Lung cancer on chemotherapy; (2) metastatic prostate cancer	
No. influenza tests, viral panels, result	16, 8, Negative	9, 3, Negative	
Length of stay, d	7.5 (2–34)	11 (1–32)	0.091
No. with ICU stay	10	11	0.009*
No. intubated	5	10	<0.001*
LOS ICU, d	6 (1–18)	6 (1–26)	0.547
Median days of mechanical ventilation	8 (6–13)	8 (1–26)	0.896
Hydroxychloroquine, n	35	17	0.523
Azithromycin, n	22	9	1.000
Doxycycline, n	8	6	0.325
β-Lactam antibiotics, n	19	15	0.015*
Steroids given, n	8	7	0.121
History of ACEI/ARB use	13	7	0.571
History of statin use	26	13	0.591
History of proton pump therapy	12	4	0.756
History of famotidine use	2	1	1.000
Tocilizumab	1	3	0.076
Convalescent serum therapy	2	2	0.574
Remdesivir	1	0	
Median QTc, ms	454 (386–612)	446 (387–562)	0.465
Abnormal chest imaging (CXR or CT), n	40	19	0.420

*$P \leq 0.05$ is statistically significant.

Adm indicates admission; ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; BMI, body mass index; CAD, coronary artery disease; CHF, congestive heart failure; CXR, chest x-ray; CT, computed tomography; COPD, chronic obstructive lung disease; LOS, length of stay; SBP, systolic blood pressure.

TABLE 2. Laboratory Data of Patients Hospitalized With COVID-19

	COVID-19 Recovered, n = 47	COVID-19 Deceased, n = 20	*P*
Median SAPS II score	28	47	**<0.001**
Median D-dimer on Adm, ng/mL	354 (<150–31,344)	542 (208–29,009)	0.949
Median peak D-dimer	480 (<150–38,977)	2465 (431–34,006)	0.299
Median procalcitonin on Adm	0.12	0.2	0.136
Median peak procalcitonin, ng/mL	0.18	2.585	**0.010**
Median CRP on Adm, mg/L	71	89	0.340
Median peak CRP	112	202	**0.002**
Median ferritin on Adm, ng/mL	387	652	**0.049**
Median peak ferritin	527	1500	**<0.001**
Median white blood, cells/mm^3	5.4 (2.4–29.6)	5.1 (2.2–13.3)	0.315
Median absolute lymphocytes	1.0 (0.5–13.4)	0.7 (0.3–1.7)	0.227
Median serum creatinine, mg/dL	1.1 (0.6–12.1)	1.45 (0.9–14.7)	0.057
Median BUN, mg/dL	18 (5–142)	36.5 (9–76)	**0.037**
Median potassium, mmol/L	4.0 (2.8–5.2)	4.2 (2.7–6.1)	**0.025**
Median LDH, IU/L	259 (109–601)	290 (169–1693)	**0.021**
Median ALT, IU/L	31 (5–187)	32 (12–269)	0.093
Median total bilirubin, mg/dL	0.8 (0.2–2.3)	0.8 (0.3–3.6)	0.669
Median bicarbonate, mmol/L	24 (18–33)	21.5 (16–28)	**0.009**
Median ESR on Adm, mm/h	52 (4–121)	53 (22–120)	0.410
Median peak ESR, mm/h	69 (10–150)	98 (43–150)	**0.041**
Median IL-6 level, pg/mL	40.6 (8–341.7)	48.5 (5.8–384)	0.803
Median BnP, pg/mL	70 (15–1574)	103 (10–744)	0.597
Blood types			
O positive	9	6	
O negative	3	1	
A positive	6	3	
A negative	1	0	
B positive	3	1	
B negative	0	0	
AB positive	2	1	
AB negative	0	0	
Unknown	23	8	
Bacteremias	None	(1) *E. faecalis* (S to ampicillin); (2) *S. mitis*; (3) MRSE (contaminant)	
Sputum cultures (treated for pneumonia)	(*a*) *Haemophilus influenzae*; (*b*) MRSA; (*c*) *Klebsiella aerogenes*; (*d*) *Pseudomonas aeruginosa*	(1) *Serratia marcescens* (R to cefazolin; (2) MSSA (2 patients)*; (3) MRSA; (4) *P. auruginosa* (2 patients)*; (5) *K. aerogenes* (R to cefazolin); (6) *Enterobacter cloacae* (R to cefazolin)*	

*Coinfections: 1 MSSA and *P. auruginosa* 1 MSSA and *Enterobacter cloacae*.

BnP, β-natriuretic peptide; LDH, lactate dehydrogenase; ALT, alanine aminotransferase; MRSE, methicillin-resistant *Staphylococcus epidermidis*; R, resistant; BUN, blood urea nitrogen; S, susceptible; S. mitis, *Streptococcus mitis*.