Clinical Infectious Diseases

CORRESPONDENCE

Hospitalized Patients With COVID-19 and Human Immunodeficiency Virus: A Case Series

To the Editor—We read with interest the article by Gervasoni et al, which describes a series of 47 people with human immunodeficiency virus (PWH) and confirmed or suspected coronavirus disease 2019 (COVID-19), 45 (96%) of whom made a full recovery [1]. Thirteen (28%) were hospitalized, 2 required ventilation, and 1 died. They conclude that the risk of severe COVID-19 in PWH was no greater, and perhaps slightly lower, than that reported in the general population. Of note, and similar to an earlier report by Blanco et al [2], ethnicity data were not reported, although emerging data in the general population suggest that race and ethnicity are associated with clinical outcomes in COVID-19 infection [3].

King's College Hospital in South London, United Kingdom, serves an ethnically diverse population and was affected early and severely by the COVID-19 pandemic [4]. We report the clinical characteristics of 18 PWH who were hospitalized with confirmed COVID-19 (ie, RNA positive for severe acute respiratory syndrome coronavirus 2) including the proportion who reached a composite endpoint of death, requiring mechanical ventilation or intensive treatment unit admission. We also compared the characteristics of those hospitalized with COVID-19 to our general human immunodeficiency virus (HIV) outpatient population.

The median age of our PWH and COVID-19 was 52 years, and most (94%) were black males with longstanding HIV infection and on antiretroviral therapy (ART) with undetectable HIV viral loads (Table 1). The majority were obese though none were smokers. The median duration of COVID-19 symptoms at admission was 8 days (interquartile range, 7–10 days). Two patients developed COVID-19 as inpatients, likely as a result of nosocomial transmission. The commonest presenting symptoms were fever, shortness of breath, and cough. Most (78%) had bilateral chest radiograph changes consistent with viral pneumonitis and required oxygen therapy. Two patients were treated with remdesivir [5], and in 2 patients ART was switched to lopinavir/ritonavir [6]. Seven patients (39%) reached the composite endpoint; these patients had similar HIV and demographic characteristics compared to those who did not reach this endpoint. At the time of writing, 5 patients had died (median time from admission to death, 8 days [range, 3–28 days]), 12 patients were successfully discharged from hospital (median duration of hospitalization, 9 days [range, 6–15 days]), and 1 patient remains an inpatient.

Compared to our whole HIV outpatient cohort, those hospitalized with COVID-19 were more likely to be of black ethnicity (odds ratio [OR], 12.22 [95% confidence interval {CI}, 1.62–92.00]) and to have lower median CD4 cell counts (395 vs 573, $P = .03$) (Supplementary Table 1). There was a trend toward more common use of protease inhibitor–containing antiretroviral regimens among those with COVID-19 (OR, 2.43 [95% CI, .94–6.29]).

Our data indicate that, in contrast to earlier reports [1, 2], there may be substantial morbidity and mortality from COVID-19 among PWH, even among those on suppressive ART. Black PWH appear to be at substantially increased risk of severe disease, and darunavir (or any other class of ART) does not appear to provide protection against moderate/severe COVID-19. If confirmed, African regions with a high prevalence of HIV infection may be particularly vulnerable to the impact of the COVID-19 pandemic.

Supplementary Data

Supplementary materials are available at *Clinical Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader, the posted materials are not copyedited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

Notes

Author contributions. The study was designed by K. C. and F. A. P.; K. C., C. N., Z. O., E. H., K. Q., and T. J. provided clinical care and data for the analysis. K. C., C. N., and F. A. P. performed the analyses. K. C. and F. A. P. wrote the first draft of the manuscript. All authors revised and approved the final version of the manuscript.

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Table 1. Clinical Characteristics of Patients With Human Immunodeficiency Virus and Coronavirus Disease 2019

Demographics, HIV Parameters, and Medical History	Total	Composite Endpoint[a] Reached	Composite Endpoint[a] Not Reached
No. (%)	18 (100)	7 (39)	11 (61)
Age, y	52 (49–58)	52 (50–62)	52 (49–57)
Male sex	12 (67)	5 (71)	7 (64)
Black race	17 (94)[b]	7 (100)	10 (91)
Time since HIV diagnosis, y	14.6 (9.7–23.4)	20.2 (10.0–24.2)	14.5 (8.8–23.2)
Risk factor for HIV acquisition			
Heterosexual transmission	13 (72)	6 (87)	7 (63)
Men who have sex with men	3 (17)	0	3 (27)
Previous AIDS-defining illness	7 (39)	2 (29)	5 (46)
Preadmission CD4 count, cells/μL[c]	395 (238–680)	667 (276–770)	358 (148–530)
Nadir CD4 count, cells/μL	97 (45–143)	69 (30–104)	119 (52–216)
HIV RNA <50 copies/mL	17 (94)	7 (100)	10 (91)
Antiretroviral therapy			
Protease inhibitor[d]	11 (61)	4 (57)	7 (64)
INSTI	3 (17)	2 (29)	1 (9)
NNRTI	4 (22)	1 (14)	3 (27)
NRTI	18 (100)	7 (100)	11 (100)
Clinical frailty index[e] ≤4	15 (83)	5 (71)	10 (91)
Smoker	0	0	0
BMI >30 kg/m^2	10 (56)	5 (71)	5 (45)
Hypertension	6 (33)	2 (29)	4 (36)
Diabetes mellitus	4 (22)	3 (43)	1 (9)
Chronic kidney disease[f]	5 (28)	3 (43)	2 (18)
On admission			
Symptoms			
Cough	13 (72)	6 (86)	7 (64)
Fever	11 (61)	5 (71)	7 (64)
Shortness of breath	12 (67)	3 (43)	7 (64)
Time since onset of COVID-19 symptoms, d	8 (7–10)	8 (4–12)	7 (7–10)
Infiltrates on radiograph	13 (72)	7 (100)	6 (55)
Lymphocytes, × 10^9/L	1.1 (0.7–1.9)	1.4 (1.1–2.3)	0.9 (0.5–1.8)
C-reactive protein, mg/L	143 (72–253)	203 (100–302)	130 (72–213)
During hospital admission			
Acute kidney injury[g]	5 (28)	5 (71)	0
Peak oxygen requirement			
FiO_2 <28%	3 (16)	0	3 (27)
FiO_2 28%–60%	5 (28)	0	5 (45)
FiO_2 >60% via nonrebreathing bag	3 (16)	2 (29)	1 (9)
Mechanical ventilation	5 (28)	5 (71)	0
Vasopressor support	5 (28)	5 (71)	0
Renal replacement therapy	4 (22)	4 (57)	0

Data are expressed as no. (%) for categorical variables or median (interquartile range) for continuous variables.

Abbreviations: BMI, body mass index; COVID-19, coronavirus disease 2019; FiO_2, fraction of inspired oxygen; HIV, human immunodeficiency virus; INSTI, integrase strand transfer inhibitor; NNRTI, nonnucleoside reverse transcriptase inhibitor; NRTI, nucleoside reverse transcriptase inhibitor.

[a]Composite endpoint: mechanical ventilation, intensive treatment unit admission, or death.

[b]Among black patients, 65% were born in sub-Saharan Africa.

[c]Most recent outpatient measurement.

[d]All were on darunavir boosted with ritonavir or cobicistat.

[e]Clinical frailty scale from the Canadian Study on Health & Aging, revised 2008.

[f]Stage 3/4/5 chronic kidney disease according to Kidney Disease–Improving Global Outcomes (KDIGO) criteria 2012.

[g]Stage 2/3 acute kidney injury according to KDIGO criteria 2012.

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