Clinical Features and Outcomes of 112 Patients with SARS-CoV-2 Infection Requiring Intensive Care in a Public Healthcare System in South Florida

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INTRODUCTION

♦The emergence of coronavirus disease 2019 (COVID-19) has led to significant impact on healthcare services worldwide.

♦ The reported mortality rates for critically ill COVID-19 patients, both in the US and globally, vary widely.[1,2] Current literature is largely composed of studies conducted in academic centers,

♦Data pertaining to critically ill, COVID-19 patients in public community-based healthcare systems, is limited.

OBJECTIVES

To describe characteristics, treatments, outcomes and mortality risk factors for critically ill COVID-19 patients in a community-based healthcare system in South Florida during the first surge of the pandemic.

METHODS

Study Design, Setting and Participants

- A retrospective observational cohort study of 112 critically ill, adult patients (18 years or older) with COVID-19 who were admitted to the four ICUs of Memorial Healthcare System, Broward County, Florida between March 7 and May 14, 2020.

Clinical Outcomes

- The primary outcome of this study was in-ICU mortality. Secondary outcomes included ICU length of stay, duration of mechanical ventilation, and the number of patients who had died, had been discharged, and those that remained in ICU as of May 14, 2020. Risk factors associated with in-ICU mortality were analyzed using the Cox proportional hazards model.

DEMOGRAPHICS AND COMORBIDITIES

Of the 112 patients, the median age of patients was 67 years (IQR 58-75) and 72 (64%) were older than 65 years. 68 (61%) of 112 patients were male. 67 (60%) patients had obesity (defined as body mass index [BMI] ≥30 kg/m^2), including 18 (27%) with a BMI of 35–39.9 kg/m^2 and 13 (18%) with a BMI ≥ 40 kg/m^2.

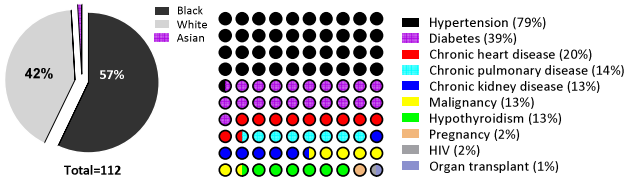

Figure 1. Demographics and coexisting comorbidities. Of the 112 patients, 81 (72%) had two or more coexisting medical conditions.

RESULTS – Clinical Characteristics, Outcomes, and Risk Factors Associated with Mortality

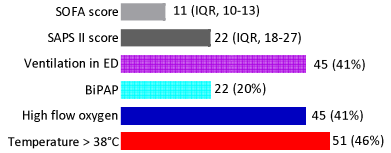

Figure 2. Clinical characteristics of critically ill COVID-19 patients on ICU admission.

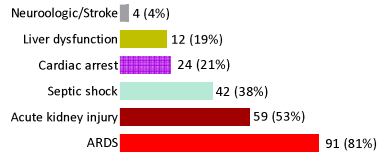

Figure 3. Clinical complications of critically ill COVID-19 patients during ICU stay.

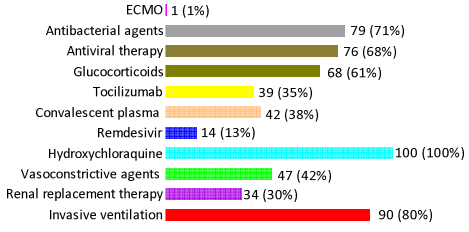

Figure 4. Management of critically ill patients with COVID-19 in ICU.

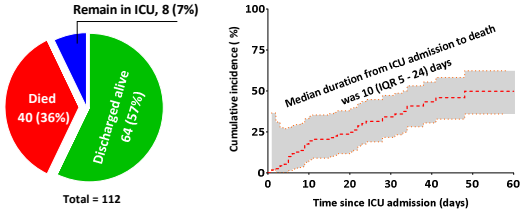

Figure 5. Clinical outcomes of critically ill patients with COVID-19 in ICU.

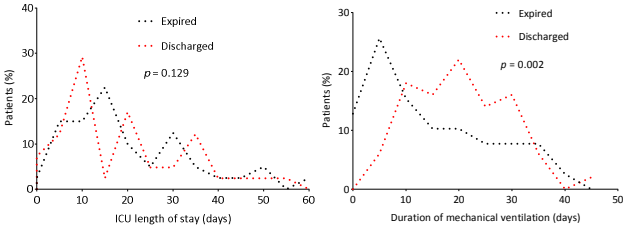

Figure 6. The average ICU length of stay for the expired patients were 20.19 days versus 19.15 days for the discharged patients (p = 0.129; *Left panel*). The average duration of mechanical ventilation for the expired patients was shorter than for the discharged patients (14.16 ± 11.51 *vs* 20.14 ± 9.58 days; p = 0.002; *Right panel*).

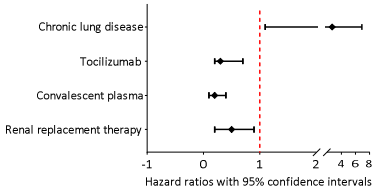

Figure 7. Forest plot of hazard ratios with 95% confidence intervals for ICU mortality. The Cox proportional hazards model was used to determine the performance of the following factors to predict ICU mortality: age, gender, BMI, hypertension, diabetes, chronic heart disease, chronic lung disease, chronic kidney disease, malignancy, hypothyroidism, obesity, smoking, invasive ventilation, initial creatinine level, remdesivir, convalescent plasma transfusion, tocilizumab, glucocorticoid and kidney replacement therapy. **Convalescent plasma transfusion** (HR 0.17, 95% CI, 0.07 to 0.39; p=0.000), **tocilizumab** (HR 0.34, 95% CI, 0.16 to 0.74; p=0.006), and **renal replacement therapy** (HR 0.46, 95% CI, 0.23 to 0.95; p=0.037) were inversely associated with the risk of death, whereas **chronic lung disease** (HR 2.71, 95% CI, 1.07 to 6.92; p=0.036) was an independent factor associated with increased risk of mortality.

CONCLUSIONS

1. In a community healthcare system in South Florida, the ICU mortality rate of COVID-19 patients was 36%.

2. The average ICU length of stay for those discharged was similar to those that died. The average duration of mechanical ventilation was significantly longer for those discharged than for those that died.

3. Mortality was associated with chronic pulmonary disease and inversely associated with renal replacement therapy, convalescent plasma transfusion, and tocilizumab administration.

[1]Murthy S, et al., JAMA 2020;232:1499-1500; [2]Armstrong RA, et al., Anaesthesia 2020;75:1340-1349.

DISCLOSURES: None