between dengue and COVID-19. These findings could be useful in geographical areas with a lack of resources.

Disclosures. All Authors: No reported disclosures

321. Clinical Characteristics of Hospitalized HIV Patients with COVID-19 in Miami

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Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. HIV is a significant risk factor for acquiring SARS-CoV-2 infection and is associated with increased risk of mortality from COVID-19. Information on the clinical characteristics of persons living with HIV(PLWH) hospitalized due to COVID-19 infection are inconsistent and sparse. As Miami is currently the epicenter of new HIV infection, an understanding of the clinical characteristics of COVID-19 in hospitalized HIV patients in South Florida is needful.

Methods. This is a single center retrospective case series analysis of individuals with HIV hospitalized with COVID-19 from March 1, 2020 to March 31, 2021. We analyzed relevant data related to demographics, comorbidities, clinical presentation, HIV viral load and CD4 profiles, serum inflammatory markers, COVID-19 treatment and survival.

Results. 25 patients were identified. The demographic, socioeconomic and clinical data are described in Table 1. 88% of subjects. were on HIV antiretroviral treatment (ART) but only 60% had CD4 counts > 200cells/mm³. More study results are shown in Figures 1 and 2. The serum ferritin ranged from 29 to 40,577ng/mL while serum creatinine ranged from 0.51 to 2.8mg/dL, mean 1.04± 0.46 mg/dL. The Pearson correlation between serum ferritin and serum creatinine (SCreat) was 0.715, p < 0.001 and between lymphopenia and SCreat, it was 0.544, p=0.005. 40% of subjects with CD4 < 200 cells/mm³ died compared to 33% with CD4 > 200 cells/mm³.

Figure 1. Bar chart showing month and year of hospital admission for COVID-19 in HIV infected persons
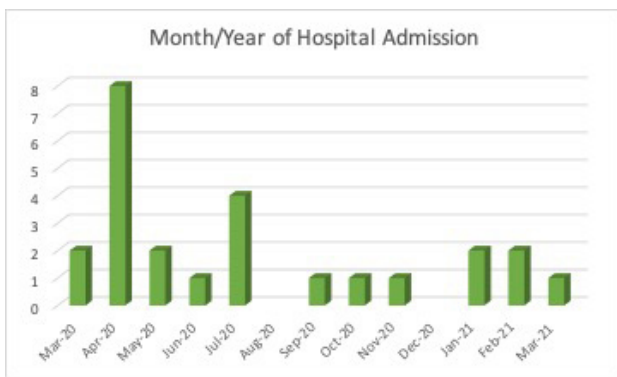

Month/Year of Hospital Admission

Table 1

Table 1. Demographic, socioeconomic and clinical characteristics of 25 HIV infected patients hospitalized for COVID-19

Demographic, socioeconomic and clinical characteristics of 25 HIV infected patients hospitalized for COVID-19

Figure 2. Bar chart showing different percentages of the cohort who received the different COVID-19 treatment illustrated
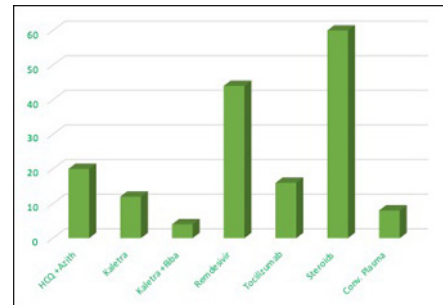
Conclusion. This first case series of hospitalized COVID-19 patients in PLWH illustrate important demographic and socioeconomic trends with an imbalance towards African Americans. The group mortality rate appear to be higher compared to the overall mortality rate of COVID-19 reported in the general population or other published HIV-COVID-19 coinfection case series. This is not surprising given the fact that only 64% of the cohort had undetected viral load and only 60% had CD4 counts > 200 despite reported 88% ART use. Correlations between lymphopenia and serum ferritin on one hand and serum creatinine on the other hand should be further explored in a larger case series or prospective study. Since COVID-19 mortality is related to HIV severity, improving socioeconomic status and ART compliance could play a big role in positively improving outcome of hospitalized HIV-COVID 19 patients.

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322. Risk Factors for COVID-19 Disease Severity Using Electronic-Health Records in a Real-World Cohort in the United States

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Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. Over 32 million cases of COVID-19 have been reported in the US. Outcomes range from mild upper respiratory infection to hospitalization, acute respiratory failure, and death. We assessed risk factors associated with severe disease, defined as hospitalization within 21 days of diagnosis or death, using US electronic health records (EHR).

Methods. Patients in the Optum de-identified COVID-19 EHR database who were diagnosed with COVID-19 in 2020 were included in the analysis. Regularized multivariable logistic regression was used to identify risk factors for severe disease. Covariates included demographics, comorbidities, history of influenza vaccination, and calendar time.

Results. Of the 193,454 eligible patients, 36,043 (18.6%) were hospitalized within 21 days of COVID-19 diagnosis, and 6,397 (3.3%) died. Calendar time followed an inverse J-shaped relationship where severe disease rates rapidly declined in the first 25 weeks of the pandemic. BMI followed an asymmetric V-shaped relationship with highest rates of disease severity observed at the extremes. In the multivariable model, older age had the strongest association with disease severity (odds ratios and 95% confidence intervals of significant associations in Figure). Other risk factors were male sex, uninsured status, underweight and obese BMI, higher Charlson Comorbidity Index, and individual comorbidities including hypertension. Asthma and overweight BMI were not associated with disease severity. Blacks, Hispanics, and Asians experienced higher odds of disease severity compared to Whites.

Figure. Significant associations (odds ratio and 95% confidence intervals) with COVID-19 severity (hospitalization or death), adjusted for geographical division.
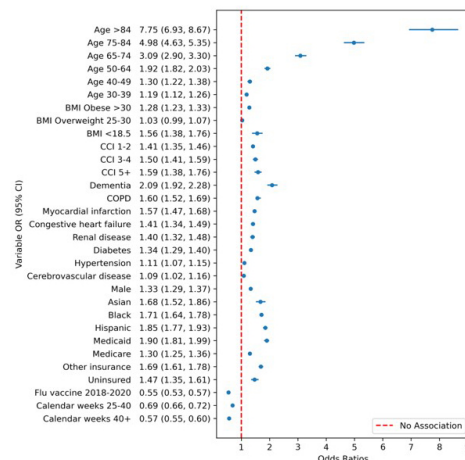
Reference and abbreviation categories: Charlson comorbidity index (CCI) = 0; Age = 18-30; Sex = Female; Race/Ethnicity = White; Insurance = Commercial; Body mass index (BMI) = 18.5-25; Calendar time = 0-25 weeks; Chronic obstructive pulmonary disease (COPD).

Conclusion. Odds of hospitalization or death have decreased since the start of the pandemic, with the steepest decline observed up to mid-August, possibly reflecting changes in both testing and treatment. Older age is the most important predictor of severe COVID-19. Obese and underweight, but not overweight, BMI were associated with increased odds of disease severity when compared to normal weight. Hypertension, despite not being included in many guidelines for vaccine prioritization, is a significant risk factor. Pronounced health disparities remain across race and ethnicity after accounting for comorbidities, with minorities experiencing higher disease severity.

323. Distribution of Pathogens in Coinfections of Patients Admitted with COVID-19

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Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. Patients who are admitted to the hospital with Coronavirus Disease 2019 (COVID-19) often have protracted hospitalizations complicated by bacterial or fungal co-infections. This also raises the question whether there is some feature of COVID-19 that predisposes to development of specific co-infections. To begin answering that question, we sought to review the distribution of microorganisms identified in bacterial and respiratory cultures in patients admitted with COVID-19.

Methods. In a retrospective review of all patients admitted with COVID-19 in the year 2020 at a single academic tertiary medical facility, all positive blood and respiratory cultures were reviewed. Common contaminants were removed. Duplicate growth of the same organism within the same patient was not counted as a separate event.

Results. 787 patients were admitted with COVID-19 for the specified time frame. There were 131 and 147 unique events of documented bacterial or fungal growth seen in blood cultures and respiratory tract cultures, respectively. The most commonly identified organism in blood cultures was *Staphylococcus aureus* (3.94% of patients with COVID-19), followed closely by *Enterococcus* (2.41%), *Klebsiella* (1.65%), and *Escherichia* (1.27%). *Staphylococcus aureus* was also the most frequently isolated organism in respiratory cultures (7.24% of patients with COVID-19), followed by *Pseudomonas* (3.43%), *Klebsiella* (1.78%), *Serratia* (0.89%), and *Stenotrophomonas* (0.89%).

Conclusion. This suggests that the distribution of pathogens implicated in coinfections in this patient population may not be substantially different from what might be expected in patients admitted for reasons outside of COVID-19. Further investigation with a larger patient population would provide more generalizable data, including patients admitted for reasons outside of COVID-19.

324. COVID-19-Associated Pulmonary Aspergillosis (CAPA) at Veterans Affairs (VA) Hospitals in Southern California and Arizona

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Background. The data on CAPA in the U.S. are limited to date and clinical characteristics unique to this phenomenon have not been widely reported.

Methods. This retrospective observational study was conducted at multiple VA hospitals across southern California and Arizona. CAPA cases were identified in inpatients with laboratory-confirmed COVID-19 based on microbiologic or serologic evidence of aspergillosis and pulmonary abnormalities on imaging, and were classified according to ECMM/ISHAM consensus definitions. Characteristics of interest included immunosuppressive/modulatory agents used prior to onset of CAPA, COVID-19 disease course, length of hospitalization, and mortality.

Results. Seventeen patients with probable (18%) or possible (82%) CAPA were identified from April 2020 to March 2021. Values below reported as medians. All patients were male and 13 (76%) were white, with age 74 years and BMI 26 kg/m^{2}. Baseline comorbidities included diabetes mellitus (47%), cardiovascular disease (65%), and pulmonary disease (71%). Evidence of aspergillosis was mostly based on respiratory culture, with mainly *A. fumigatus* (75%). Systemic corticosteroids were used in 14 patients, with a total dose of 400 mg prednisone equivalents starting 10 days prior to *Aspergillus* detection. Patients also received tocilizumab (18%), leflunomide (6%), tacrolimus (6%), mycophenolate (6%), and investigational agent LSALT or placebo (6%); 2 patients (12%) did not receive any immunosuppression/modulation. Length of hospitalization for COVID-19 was 22 days. Death occurred in 12 patients (71%), including all patients with probable CAPA, at 34 days after COVID-19 diagnosis and 16 days after CAPA diagnosis. Eight patients (47%) were treated for aspergillosis; mortality did not appear to differ with treatment (75% vs. 67%).

Table 1. COVID-19 Inpatient Characteristics

Event – n (%)	All Inpatients with COVID-19 (n=1238)	CAPA Cases (n=17)
ICU admission	501 (40)	14 (82)
Use of mechanical ventilation	181 (15)	11 (65)
Death	143 (12)	12 (71)

Table 2. Incidence of Aspergillus Growth on Respiratory Culture

Time Frame	Positive Cultures		
	All	Inpatients	COVID-19 Inpatients
2017	70	36	-
2018	68	23	-
2019	75	18	-
Study period	106	60	17

Conclusion. This case series reports high mortality among patients with CAPA; the primary contributor to this outcome is unclear. Frequency of lower respiratory tract sampling in patients with COVID-19 may have limited diagnosis of CAPA. Interestingly, inpatient respiratory cultures with *Aspergillus* spp. increased compared to previous years. Future work will attempt to identify risk factors for CAPA and attributable mortality via comparison to inpatients with COVID-19 without CAPA.

325. Empiric Antibiotics for COVID-19 and the Utility of Procalcitonin

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Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. Bacterial coinfection in COVID-19 is infrequent, yet empiric antibiotic use is common. The objectives of this study were to investigate the effect of empiric antibiotics on time to resolution of COVID-19 pneumonia, elucidate the impact of COVID-19 on procalcitonin levels, and determine the incidence of respiratory bacterial coinfection.

Methods. This was a retrospective study of adult patients hospitalized with COVID-19 between June 1, 2020 and September 30, 2020. Patients were included if they had at least one procalcitonin level. They were excluded if admitted to an intensive care unit within 24 hours of presentation or received antibiotics for an indication besides pneumonia. Patients were stratified into 4 groups based on procalcitonin level and receipt of antibiotics. The primary outcome was time to clinical resolution of pneumonia. A key secondary outcome was incidence of confirmed respiratory bacterial coinfection.

Results. A total of 199 patients were included. Patients with a procalcitonin greater than 0.25 ng/mL who received antibiotics had a longer median time to clinical resolution of pneumonia, 8 days (95% CI, 4 to 11 days) vs. 3 or 4 days in other groups (P< 0.001). Additionally, this same group required greater baseline oxygen supplementation, had more comorbidities, and increased mortality compared to all other groups. Median time to clinical resolution of pneumonia was also longer in patients who received antibiotics compared to those who did not (5 vs. 4 days, P=0.017) and in those with a procalcitonin greater than 0.25 ng/mL compared to those with PCT less than or equal to 0.25 ng/mL (7 vs. 4 days, P< 0.001). Renal dysfunction was more prevalent in patients with an elevated procalcitonin (45% vs. 17.5%). The overall incidence of confirmed respiratory bacterial coinfection was 1.5%.

Conclusion. Irrespective of procalcitonin level, empiric antibiotics were not associated with a shorter time to resolution of COVID-19 pneumonia in non-critically ill patients. Elevated procalcitonin is likely a reflection of the severity of COVID-19 disease and baseline renal function rather than bacterial infection. Additionally, the