Biomarkers of COVID-19, a Longitudinal and Retrospective Assessment of a NYC 1st Wave Cohort

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RATIONALE The novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) causes coronavirus 2019 (COVID-19), a new infectious disease, for which there are currently limited treatments. SARS-CoV-2 emerged in Wuhan, China in late 2019 and has expanded into a pandemic, which was declared on March 20, 2020. The United States (US) reported its first confirmed case on January 12, 2020, it has become the country with the greatest number of both cumulative and active COVID-19 cases. As of December 20, 2020, the US has over 17.9 million cases. As of April 11, 2020, the state of New York was the epicenter of the global health emergency with more confirmed cases of COVID-19 then any country worldwide. New York. Biomarkers have been studied in the context of COVID-19, but there have only been a few studies of a limited population. COVID-19 is a resource intensive disease with a high mortality. Therefore, being able to define predictive/associated biomarkers may not only facilitate early diagnosis of presumptive COVID, but also provide guidelines for early aggressive treatment and acuity of care triage.METHODS We examined all patients, admitted the MICU and adult medicine service for confirmed positive cases COVID or presumed COVID admitted to the Manhattan and Brooklyn campuses of our institution in the first 60 days of the COVID-19 pandemic, March 1-April 30, 2020. Our natural history study was accomplished by the review of the electronic medical records (EMR) of those diagnosed with COVID-19. Subjects were examined from the time of admission to discharge from each of the participating institutions. All data was collected in compliance with the Code of Federal Regulations, Title 21, Part 11 and approved by the NYU IRB#20-00473.RESULTS Of the N=13,307 COVID-19 positive patients admitted, N=4136 were of Hispanic/Latino descent, and N=932 were admitted to the ICU. The cohort was followed longitudinally with serial labs including inflammatory markers: d-dimers, ferritin, IL-1, IL-6, and CRP. Peak d-dimer, ferritin, and IL-6 was significantly associated with ICU admission (p<0.001, p<0.001, p=0.001 respectively), whereas IL-1 was not by Student's t-test (p=0.226). Hispanic/Latino descent was not significantly associated with ICU admission. CONCLUSIONS. Biomarkers of COVID-19 may potentially prognosticate ICU admission status. Further analysis is needed to assess the model's sensitivity and specificity for predicting morbidity and mortality.