qualitatively detect IgG antibodies against SARS-CoV-2 antigens. The Abbott assay detects IgG against the viral nucleocapsid (N) protein, while the DiaSorin assay uses antigen derived from the viral spike (S) protein. Here we evaluate the performance of these two assays at our institution.

Methods: 45 patient samples (serum or plasma) were tested for anti-SARS-CoV-2 IgG by both the Abbott and DiaSorin assays. The samples were previously characterized at a national reference laboratory using the Abbott assay or by an in-house PCR-based test for SARS-CoV-2 RNA. Samples yielding discordant results across platforms were further tested using the EUROIMMUN Anti-SARS-CoV-2 ELISA (IgG) assay at the reference laboratory.

Results: 22 samples tested negative for SARS-CoV-2 by the reference lab Abbott assay, and 23 tested positive by the same reference lab test (n = 13) or by an in-house PCR-based test (n = 10). The 22 samples characterized as negative again tested negative by both the Abbott (in-house) and DiaSorin assays (100% NPA). Among the 23 samples characterized as positive, all 23 tested positive by the Abbott assay (100% PPA), while only 15 tested positive by the DiaSorin assay (65% PPA). For each of the 8 discordant cases, samples were further tested by EUROIMMUN assay, which targets the S protein; 7 of the 8 samples tested negative by this assay, in agreement with the DiaSorin test results. Thus, for the discordant cases, testing for IgG against N (in-house and reference lab Abbott assays) gave positive results, while testing for IgG against S (DiaSorin and EUROIMMUN assays) mostly gave negative results.

Conclusion: These findings highlight the importance of the differences between various SARS-CoV-2 antibody tests, and providers should be aware of the specific antigenic target(s) in each test. Selection of a specific assay may depend on the need to assess past exposure to SARS-CoV-2 (for which a nucleocapsid target may be more sensitive) or to detect neutralizing antibodies (for which a spike target may be more relevant). This also has implications for disease surveillance as reliance on anti-spike antibodies alone may underestimate infection prevalence.

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419. Diagnostic Utility of a Ferritin to Procalcitonin Ratio to Differentiate Patients with COVID-19 from Those with Bacterial Pneumonia

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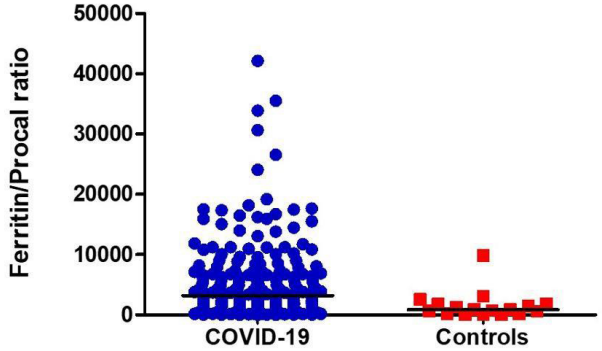
Session: P-13. COVID-19 Diagnostics

Background: Accurate, rapid, inexpensive biomarkers are needed to differentiate COVID-19 from bacterial pneumonia, allowing effective treatment and antibiotic stewardship. We hypothesized that the ratio of ferritin to procalcitonin (F/P) reflects greater viral activity and host response with COVID-19 pneumonia, while bacterial pneumonia would be associated with less cytolysis (lower ferritin) and more inflammation (higher procalcitonin), thus a lower F/P ratio.

Methods: We conducted a retrospective study of adult patients admitted to a single University hospital in the US through May 2020, during the COVID-19 pandemic. We compared F/P ratio of patients diagnosed with COVID-19 or bacterial pneumonia, excluding patients with COVID-19 and bacterial co-infections. In a logistic regression, we controlled for age, sex, body mass index (BMI), diabetes (DM), and hypertension (HTN). We used a receiver operating characteristic analysis to calculate the sensitivity and specificity of F/P values for the diagnosis of COVID-19 versus bacterial pneumonia.

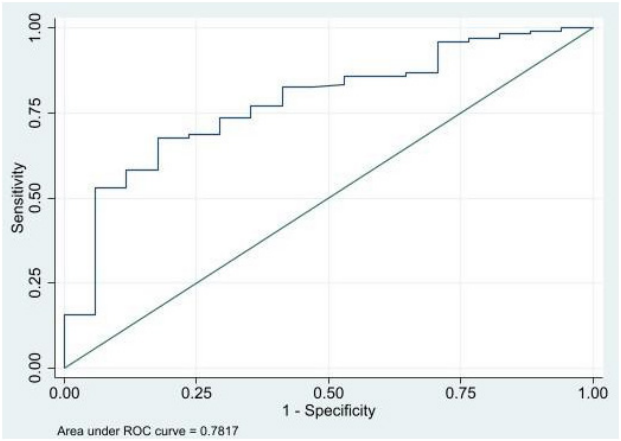
Results: Of 218 patients with COVID-19 and 17 with bacterial pneumonia, COVID-19 patients were younger (56 vs 66 years, p=0.04), male (66% vs 24%, p=0.009), had higher BMI (31 vs 27 kg/m^2, p=0.03), and similar rates of HTN (59% vs 45%, p=0.3) and DM (32% vs 18%, p=0.2). The median F/P ratio was significantly higher in patients with COVID-19 (3195 vs 860, p=0.0003, Figure 1). An F/P ratio cut-off of ≥ 1250 generated a sensitivity of 78% and a specificity of 59% to correctly classify a COVID-19 case (Figure 2). When adjusted for age, gender, BMI, DM, and HTN, a ratio ≥ of 1250 was associated with significantly greater odds of COVID-19 versus bacterial pneumonia (OR: 4.9, CI: 1.5, 16.1, p=0.009).

Figure 1. Ferritin to Procalcitonin Ratios of patients with COVID-19 and patients with Bacterial Pneumonia (controls).



Black line represents medians. P=0.0003

Figure 2. Receiver Operating Characteristic Analysis of Ferritin to Procalcitonin Ratio Cut-off Values Predicting COVID-19 Diagnosis.



Conclusion: We observed an elevated F/P ratio in patients with COVID-19 compared to those with bacterial pneumonia. A F/P ratio ≥ 1250 provides a clinically relevant increase in pre-test probability of COVID-19. Prospective studies evaluating the discriminatory characteristics of F/P ratio in larger cohorts is warranted.

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420. Diagnostic Utility of Chest CT scan for COVID-19, in the Early Stage of the Pandemic in Brooklyn, New York

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Session: P-13. COVID-19 Diagnostics

Background: Diagnosis of coronavirus disease 2019 (COVID-19) in the early weeks of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic in New York City posed unique challenges. Due to inadequate testing availability and long turnaround times, decisions on which patients to isolate were problematic. With sensitivity comparable to reverse transcription polymerase chain reaction (RT-PCR), the absence of ground glass opacities (GGOs) on chest CT scan was useful to rule out COVID-19. We evaluated the specificity of chest CT scan findings for COVID-19 along with other clinical and laboratory findings.

Methods: A retrospective chart review was done of 182 adult patients who were tested for SARS-CoV-2 by RT-PCR and underwent a chest CT scan while admitted to Maimonides Medical Center between March 1 to 23, 2020. Cases were defined as those with a positive RT-PCR result or who were treated for COVID-19. Negative cases were defined as those with negative RT-PCR and an alternative diagnosis confirmed by an ID physician. Beyond March 23, almost all newly admitted patients were isolated.

Results: There were 111 COVID-19 positive and 71 COVID-19 negative patients. Of the COVID-19 patients, 61% were male and 39% female, 56% white, 20% Hispanic, 14% black, 9% Asian, 36% Jewish, 35% had diabetes mellitus (DM), 50% had hypertension and 42% had cardiovascular disease. Clinical symptoms, signs, and laboratory values for COVID-19 positive and negative groups were not significantly different. COVID-19 patients had significantly higher BMI (p = 0.001). On chest CT scan, bilateral or unilateral, peripheral distribution and lower lobar GGOs were over 80% specific for COVID-19. The frequency of GGOs was significantly higher when chest CT scans were done during the second week of illness compared to the first week (p = 0.0195). Jewish patients were associated with higher rates of death (p = 0.0475) and underlying DM was associated with higher rates of ARDS, AKI, intubation, ICU admission and death (p < 0.05) compared to other demographic and comorbid groups.

Conclusion: Chest CT scan is an important component in the diagnostic process for patients with suspected COVID-19 infection, especially during the second week of symptoms. The findings may aid clinical decisions in the setting of a second surge of SARS-CoV-2.

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421. If at first you do not succeed…. Repeat SARS-COV2 PCR testing

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Session: P-13. COVID-19 Diagnostics

Background: Nucleic Acid Amplification Tests (NAATs) of nasopharyngeal specimens (NPS) have become standard for diagnosis of SARS-COV2. IDSA guidelines suggest repeat testing after 24–48 h when initially negative and clinical suspicion persists. We characterized patients from whom initial NPS were NAAT-negative, but