Prediction of Outcomes Based on Genomic Load and Pneumonia Severity Index

Conclusion: High genomic load of SARS-CoV-2 in nasopharyngeal samples at the time of admission is independently associated with mortality and intubation. This finding should prompt further research on the role of viral load as a clinical predictor and possible modifiable risk factor for adverse outcomes as treatment strategies evolve in this global pandemic.

Disclosures: All Authors: No reported disclosures

414. Association of SARS-CoV-2 Genomic Load Trends with Clinical Status in COVID-19: A Retrospective Analysis from an Academic Hospital Center in New York City

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Session: P-13. COVID-19 Diagnostics

Background: The Infectious Diseases Society of America has identified the potential use of SARS-CoV-2 genomic load for prognostication purposes as a key research question.

Methods: We designed a retrospective cohort study that included adult patients with COVID-19 pneumonia who had at least 2 positive nasopharyngeal tests at least 24 hours apart to study the correlation between the change in the genomic load of SARS-CoV-2 in nasopharyngeal samples, as reflected by the Cycle threshold (Ct) value of the real-time Polymerase Chain Reaction (PCR) assay, with change in clinical status. The Sequential Organ Failure Assessment (SOFA) score was used as a surrogate for patients’ clinical status. A linear mixed-effects regression analysis was performed.

Results: Among 457 patients who presented to the emergency department between 3/31/2020-4/10/2020, we identified 42 patients who met the inclusion criteria. The median initial SOFA score was 2 (IQR 2–3). 20 out of 42 patients had a lower SOFA score on their subsequent tests. We identified a statistically significant inverse correlation between the change in SOFA score and change in the Ct value with a decrease in SOFA score by 0.05 (SE 0.02; p < 0.05) for an increase in Ct values by 1. This correlation was independent of the duration of symptoms.

Conclusion: Our findings suggest that an increasing Ct value in sequential tests may be of prognostic value for patients diagnosed with COVID-19 pneumonia. Before repeat testing can be recommended routinely in clinical practice as a predictor of disease outcomes, prospective studies with a standardized interval between repeat tests should confirm our findings.

Disclosures: All Authors: No reported disclosures

415. Clinical Impact of Molecular Point-of-Care Testing for COVID-19 in Adults Presenting to Hospital: A Prospective, Interventional, Non-Randomised, Controlled Study

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Conclusion: Our findings suggest that an increasing Ct value in sequential tests may be of prognostic value for patients diagnosed with COVID-19 pneumonia. Before repeat testing can be recommended routinely in clinical practice as a predictor of disease outcomes, prospective studies with a standardized interval between repeat tests should confirm our findings.

Disclosures: All Authors: No reported disclosures
Session: P-13. COVID-19 Diagnostics

Background: The management of the COVID-19 pandemic is hampered by the long latency and nosocomial transmission and so rapid, accurate diagnostic tests are urgently required. The aim of this study was to evaluate the clinical impact and real-world diagnostic accuracy of molecular point-of-care testing (mPOCT) for COVID-19 in hospitals.

Methods: We performed a prospective, interventional, non-randomised, controlled study of mPOCT for COVID-19 in adults presenting to hospital with suspected COVID-19. Patients were tested using the QiAstat-Dx SARS-CoV-2 at the point-of-care and all clinical and infection control teams. Control patients were tested using the PHE RdRp reference assay. The Primary outcome measure was time to result and secondary outcome measures included infection control outcomes and measures of diagnostic accuracy.

Results: Between 20th March and 29th April 2020 500 patients were tested by mPOCT and 555 controls, who were tested with laboratory PCR, were included. Overall, 33% were positive for SARS-CoV-2. Median time to results with PCT was 1.7 (1.6 to 1.9) hours versus 21.3 (16.0 to 27.9) hours in the control group (difference of 19.6 hours, 95% CI 19.0 to 20.3; p<0.0001). Median time to arrive in definitive clinical area (COVID-19 positive or negative ward) was 8.0 (6.0 to 15.0) hours in the PCT group versus 28.8 (23.5 to 38.9) hours in the control group, p<0.0001. Median time to enrollment into other COVID-19 clinical trials was 1.5 (1 to 3) days in the PCT group versus 3.0 (2 to 5) days in the control group, p<0.0001. Sensitivity of the PCT was 99.4% and specificity was 98.3%. The sensitivity of the laboratory PHE RdRp assay was 87.2% and specificity was 98.9%.

Conclusion: mPOCT was associated with a large reduction in time to results and improvements in infection control measures and patient flow, compared with laboratory based testing. In addition, patients were recruited onto other clinical trials more rapidly with PCT. The QiAstat-Dx SARS-CoV-2 panel had high diagnostic accuracy for the detection of COVID-19 compared to laboratory PCR. Resources should be urgently made available to support the widespread implementation of mPOCT in hospitals, in preparation for the second wave.

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