SYNOPSIS

03/16/2020

Review of “Detection of SARS-CoV-2 in different types of clinical specimens”


One-Minute Summary

- The authors describe the detection of SARS-CoV-2 by real-time PCR in different specimen types collected from 205 hospital inpatients with confirmed coronavirus disease 2019 (COVID-19) from three hospitals in China between January 1 to February 17, 2020.
  - 68% were male and the mean age was 44 years (range 5 to 67 years).
  - Most patients presented with fever, dry cough and fatigue; and 19% had severe illness.
- 1,070 specimens were collected. Sample positivity by specimen type for COVID-19 was:
  - 93% (14/15) bronchoalveolar lavage fluid (BAL), 72% (75/104) sputum, 63% (5/8) nasal swab, 46% (6/13) fibrobronchoscopie brush biopsy, 32% (126/398) pharyngeal swab, 29% (44/153) stool and 1% (3/307) blood. No urine specimen tested positive (0/72).
  - Nasal swabs had the highest viral load with a mean cycle threshold (Ct) of 24.3 (correlating to 1.4x10^6 copies/mL). Mean Ct for other specimens ranged from 31.1-34.6 (<2.6x10^4 copies/mL).
- 20 patients had two to six specimens collected simultaneously.
  - Seven patients had one positive specimen (respiratory or stool specimen).
  - Five patients had positive respiratory and stool specimens.
  - Two patients had positive respiratory and blood specimens.
  - Six patients had multiple positive respiratory specimens.
  - Live virus was detected in 50% (2/4) stool specimens tested by culture and electron microscopy, suggesting the possibility for fecal transmission. Neither patient had diarrhea.

Additional Information

- Pharyngeal swabs were collected for most patients one to three days after admission. Blood, sputum, stool, urine and nasal specimens were collected throughout illness.
- BAL and fibrobronchoscopie brush biopsy were only collected from severely ill patients.
- Detailed clinical information was not available for all patients, therefore clinical correlations with viral load cannot be made.
- Real-time PCR targeted the ORF1ab gene. Ct values are inversely proportional to viral RNA levels.
PHO Reviewer’s Comments

- There was a discrepancy in the number of positive sputum specimens reported between the text and the table (72/104 and 75/104, respectively).

Citation


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