SYNOPSIS
04/12/2020

Review of “Factors associated with prolonged viral RNA shedding in patients with COVID-19”


One-Minute Summary

- This retrospective cohort study examined risk factors for prolonged viral RNA shedding in 113 confirmed coronavirus disease 2019 (COVID-19) patients from two hospitals outside of Hubei province, China.
- The median duration of viral RNA detection post symptom onset (PSO) was 17 days (interquartile range [IQR]: 13-22).
- Demographic and clinical characteristics by viral RNA shedding duration PSO (<15 days [n=37] versus ≥15 days [n=76]) (P ≤ 0.05):
  - Age (years [IQR]): 48.0 (34-61) vs. 54.5 (45-63)
  - Male: 40.5% vs. 67.1%
  - Severe illness at admission: 16.2% vs. 34.2%
  - Hypertension: 8.1% vs. 30.3%
  - Duration of symptom onset to admission (days [IQR]): 4 (2-6) vs. 6 (4-9)
- Outcome characteristics by viral RNA shedding duration since PSO (<15 days [n=37] versus ≥15 days [n=76]) (P≤0.05):
  - Duration of viral RNA shedding (days [IQR]): 11 (8-13) vs. 20 (16.5-25.5)
  - Duration of symptom onset to negative radiograph (days [IQR]): 12 (10-15) vs. 16 (13-21)
  - Duration of symptom onset to normal temperature (37.5°C) (days [IQR]): 7 (6-11) vs. 11 (10-14)
  - Duration of hospitalization (days [IQR]): 13.5 (11.5-17) vs. 22 (16-30)
  - Occurrence of acute respiratory distress syndrome, sepsis or septic shock during hospitalization (# of patients): 2 vs. 21
- Factors independently associated with longer duration of viral RNA shedding were duration of symptom onset to admission (odds ratio [OR] = 1.3; 95% confidence interval [CI]: 1.1-1.5), male sex (OR = 3.2; 95% CI: 1.3–8.0) and invasive mechanical ventilation (OR = 9.9; 95% CI: 1.1-88.0).

Additional Information

- The authors performed real-time reverse transcription-polymerase chain reaction (RT-PCR) on clinical specimens (nasopharyngeal swab, throat swab, sputum, endotracheal aspirate,
bronchoalveolar lavage fluid) collected daily from patients to detect viral RNA shedding. Less than 10% of all clinical specimens were nasopharyngeal or throat swabs.

- Patients were admitted to one of the two hospitals from January 13 through February 19, 2020 and enrolled in this study if they met one of the following criteria:
  - Patient RNA positive for > 21 days PSO and remained hospitalized
  - Patient RNA positive for ≤ 21 days PSO
  - Patient died within 21 days PSO
- Mild cases included those with pneumonia. Severe cases included those with severe pneumonia, acute respiratory distress syndrome (ARDS), sepsis and septic shock.
- 84/113 (74.3%) of patients showed viral RNA clearance before 21 days PSO, 69/84 (82.1%) were discharged, 13/84 (15.5%) remained hospitalized and 2/84 (2.4%) died. The remaining 21/113 (18.6%) patients did not show viral RNA clearance and remained hospitalized.

### PHO Reviewer’s Comments

- Further work is needed to understand the sex-specific mechanisms of COVID-19 infection.
- As noted by the authors, we currently do not know how viral RNA shedding correlates to infectious virus shedding; therefore, we cannot draw conclusions concerning the potential of these patients to act as sources of new infection.
- Since there were multiple sources of clinical specimens and that variables were not studied according to clinical specimen, there is potential bias when comparing viral RNA shedding.
- It is not clear if some of those “cleared” of viral RNA might revert to shedding later.

### Citation


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