Addressing COVID-19 in the surgical ICU: Incidence of antibodies in healthcare personnel at a quaternary care center

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Addressing COVID-19 in the surgical ICU: Incidence of antibodies in healthcare personnel at a quaternary care center


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Background

- There is concern that frontline healthcare personnel (HCP) are at increased risk of exposure to COVID-19 compared to the general population.
- Multiple studies have demonstrated significant seroprevalence of COVID-19 antibodies in HCP.
- Increased seropositivity has been associated with reduced use of personal protective equipment (PPE) along with reported PPE shortages.
- This investigation aims to determine the seroprevalence of COVID-19 in frontline HCP working at a quaternary care center that was heavily impacted by the initial surge of COVID-19, while also identifying underlying factors associated with increased seropositivity.

Methods & Materials

- HCP who participated in the management of COVID-19 patients were recruited from April 27 to May 13 of 2020.
- Unidentifiable demographic data was collected, including a questionnaire to identify potential exposure, symptoms, medical comorbidities, and adherence to PPE usage on a scale of 1 to 5 (1 being always, 5 being never).
- Serological testing was performed using CMC-19D SARS-CoV-2 (COVID-19) Rapid Antibody Test manufactured by Audacia Bioscience.
- Seropositivity was captured by formation of a dark band at the G (IgG) and C (control) positions on the test device, while IgM alone was considered a false positive.
- Pearson chi-squared and Fisher exact tests were performed to analyze categorical variables.
- SPSS version 27.0 was used for statistical analysis (SPSS, Armonk, NY).

Results

Figure 1. Sample size. A. HCP working in ICU (158), non-ICU (346), and other (N=87) settings. B. ICU personnel working in MICU (N=231) versus SICU (N=84) settings.

Figure 2. PPE usage of all HCP during and outside patient contact.

Figure 3. Comparison between IgG negative and positive HCP. A. Reported PPE usage during patient contact (p=0.063). B. Reported PPE usage outside patient contact (p=0.04).

Figure 4. Comparison between medical and surgical ICU staff. A. Reported PPE usage during patient contact (p=0.007). B. Reported PPE usage outside patient contact (p=0.001).

Figure 5. Comparison between ICU and non-ICU staff and reported PPE usage during patient contact (p=0.019).

Conclusions

- Overall seropositivity of IgG antibodies was 10.6%.
- Non-ICU personnel showed higher seroprevalence compared to ICU personnel; this may be attributed to decreased reported adherence to strict PPE usage in non-ICU areas compared to ICU areas during patient contact.
- Compared to MICU, SICU personnel appeared to be less compliant with frequency of PPE use outside patient rooms.
- Adherence to PPE usage outside patient contact was a predictor of seropositivity, and non-ICU personnel had a tendency toward high seroprevalence.

Bibliography