Rapid COVID-19–related Clinical Adaptations and Unanticipated Risks

To the Editor:

Addressing protection of patients, providers, and equipment from viral contamination in the evolving coronavirus disease 2019 (COVID-19) pandemic may prove critical for the continued safe delivery of anesthesia care. The addition of viral filters to respiratory circuits is recommended by the American Society of Anesthesiologists (Schaumburg, Illinois).[1]

Our group recently directed that Pall particulate filters (Ultipor 25, Pall Medical, USA) be placed on the Wye-connector of each breathing circuit at our pediatric hospital. On the first day of use, three providers caring for smaller patients (weight range, 4 to 12 kg) undergoing either laparoscopic or nonlaparoscopic surgery encountered severe hypercapnea, with peak end-tidal carbon dioxide levels from 70 to 124 mmHg. Patients' tidal volumes ranged from 36 to 150 ml. The hypercapnea could not be managed by alteration of the ventilation parameters (rate, pressure, fresh gas flow). Practitioners finally removed the filter, and renormalization of end-tidal carbon dioxide occurred within the next 5 min. The problem was diagnosed as excessive dead space, relative to tidal volume, caused by the imposition of the viral filter. After clinician feedback and review of these instances, clinicians were provided with more detailed communication regarding the intent of the filters and their physical properties for dead space volume (35 ml), and clinicians were specifically informed that they were permitted to place the filter on the expiratory limb if needed to reduce dead space ventilation.

Unprecedented concern for infectious transmission has prompted consideration of unverified interventions to be conceived and applied to patients in real time. A second noted problem was that this intervention of viral filters was "sticky" in the minds of providers. Providers were reluctant to remove the filter even once they knew this was the cause of their ventilation issues. Caught up in the race to "do something" under current pandemic circumstances, clinicians may feel hesitant to reverse an even obviously harmful intervention (the addition of large dead space to small patients), because of concerns for the unknown consequences of a decision to remove the filter.

We caution that from our experience, it is perhaps too easy to implement a hasty change and difficult to anticipate all clinical effects, and decision-makers cannot wholly rely upon subsequent providers to quickly correct our errors even when they become apparent.

Research Support

Support was provided solely from institutional and/or departmental sources.

Competing Interests

The authors declare no competing interests.

Charles R. Schrock, M.D., Michael C. Montana, M.D., Ph.D.
Washington University in St. Louis, St. Louis, Missouri (C.R.S.).
schrockc@wustl.edu

DOI: 10.1097/ALN.0000000000003333

References

1. American Society of Anesthesiology Committee on Occupational Health. Coronavirus clinical FAQs. Available at: https://www.asahq.org/about-asa/governance-and-committees/asa-committees/committee-on-occupational-health/coronavirus/clinical-faqs. Accessed March 30, 2020.

(Accepted for publication April 2, 2020.)

<zdoi;10.1097/ALN.0000000000003333>