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【 EDITORIAL 】

Expectations for Aerosol Visualization

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Novel coronavirus disease 2019 (COVID-19), which originated in Wuhan, China, in December 2019, has spread around the world at a rapid rate, and the number of cases is still on the rise. On March 11, 2020, the world health organization (WHO) declared a pandemic, and this infection has yet to show signs of abating. The causative virus of COVID-19 is severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is transmitted mainly via droplet infection, although airborne transmission is recognized as another transmission route. With the spread of COVID-19, concerns about the infection risk through the formation of fine particles (aerosols) are growing rapidly, resulting in a strong awareness of infection prevention measures for high-risk procedures in daily work. Places where coronavirus transmission is likely include enclosed spaces, crowded areas, and situations involving close contact between individuals. Medical institutions are prone to inadequate ventilation and tend to be rife with aerosols that drift into the air due to conversation and coughing. Medical institutions are thus especially urged to take action against coronavirus transmission.

Prolonged vocalizations, tracheal intubation and extubation, tracheostomy, manual ventilation, open tracheal suctioning, noninvasive positive pressure ventilation (NPPV), and endoscopy, including bronchoscopy, are activities and procedures likely to produce aerosols. Droplet contamination during tracheal intubation and droplet expulsion during vocalization have been evaluated using ultraviolet light (1) and laser light (2). However, few reports have described the evaluation of suspended particles using a particle visualization system (3).

The manuscript by Hamada et al., "Speech sounds and production of droplets and aerosols" (4), is the first report on the production of aerosols associated with vocalization evaluated using a particle visualization system and on the effectiveness of masks for preventing the spread of aerosols. These findings are expected to be useful for evaluating the current situation and enacting preventative measures in medical field situations where aerosols are more likely to occur.

In particular, there is growing interest in the evaluation of endoscopy. In endoscopy, especially bronchoscopy, aerosol dispersion can often occur at several points during the procedure, from pretreatment to sampling (5). It is difficult to objectively evaluate the amount of aerosol emitted during a given medical treatment or the risk reduction effects for these medical treatments, although medical institutions should still take measures to prevent coronavirus transmission during these procedures.

The evaluation using a particulate visualization system presented here may serve as an objective assessment of the effectiveness of infection control measures. In addition, these findings may facilitate the development of stronger infection control measures. I believe that visualizing and evaluating previously invisible phenomena are important for raising awareness about the need for infection control.

The author states that he has no Conflict of Interest (COI).

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