

Reasons for the Overuse of Sedatives and Deep Sedation for Mechanically Ventilated Coronavirus Disease 2019 Patients

To the Editor:

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We read with great interest the study by Wongtangman et al (1) published in a recent issue of *Critical Care Medicine*, which investigated the potential mediators of high mortality rate of coronavirus disease 2019 (COVID-19)-associated acute respiratory distress syndrome (ARDS). Sophisticated statistical methods including mediation analysis and propensity score matching were leveraged to make causal inference from observational dataset (2). The authors finally concluded that COVID-19 ARDS is more likely to die than other non-COVID-19 ARDS, even after adjusting for the severity of illness, and the effect was partially mediated thorough the use of sedatives and analgesics. In other words, the study supports previous findings that deep sedation with overdosing of sedatives is associated with increased risk of adverse clinical outcomes. Since many clinical guidelines have already recommended the use of light sedation for mechanically ventilated (MV) patients (3), why there are so many patients being deeply sedated during COVID-19 pandemic? Most probably, the management of MV patients with light sedation requires more labor force. The medical resources, including medical doctors, are in short during the pandemic (4). Thus, patients are more likely to be deeply sedated to avoid any adverse events associated with light sedation such as inadvertent tube removal and agitation (5). Another explanation for the overuse of sedatives is that COVID-19-related ARDS are more likely to develop refractory hypoxia, forcing physicians to use deep sedation and advanced ventilation support to improve oxygenation. It is well documented that low arterial blood oxygenation is the hallmark of COVID-19-related ARDS. However, one limitation is that the study did not report the level of mechanical ventilation such as the use of lung recruitment maneuvers, driving pressure, positive end-expiratory pressure, and mechanical power. High level of these ventilatory supports may require high dose of sedatives and even neuromuscular blockade.

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The authors have disclosed that they do not have any potential conflicts of interest.

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The authors reply:

We appreciate the comments by Xiao and Zhao (1) on our newly article published recently in *Critical Care Medicine* (2). Our group and others reported that patients with coronavirus disease 2019 (COVID-19)-induced acute respiratory distress syndrome (ARDS) received higher doses of hypnotics than patients with ARDS of other etiologies and experienced higher acute brain dysfunction (3, 4). Our study (2) adds the important information that overuse of sedatives increases the risk of prolonged coma, which increases the vulnerability to a fatal outcome.

Xiao and Zhao (1) speculate around possible reasons of the overuse of sedatives in patients with COVID-19-induced ARDS, and we agree with these thoughts: ICU providers may have been overfocused on the goal of preventing self-extubation and the associated risk of virus transmission to providers in an overburdened healthcare system. During the pandemic, often one nurse was responsible for numerous COVID-19 patients, and personal protective equipment may have not been available without restrictions. Continuous infusions of sedative medications were preferred in these circumstances, which made titration to light sedation very challenging. In addition, short-acting sedatives were not always available, such that long-acting benzodiazepines were used.

In our study (2), we ensured that differences in case acuity did not bias our conclusions. There were no differences between patients with and without COVID-19 in $Pao_2:FIO_2$ ratio, minute ventilation, pH, Sequential Organ Failure Assessment scores, or brain pathology. Thus, those differences in cases severity did not explain the overuse of sedative medications and the higher percentage of coma in patients with COVID-19, which we found mediated an increase in in-hospital mortality.

Our study (2) emphasizes the importance of avoiding prolonged, deep sedation. A light sedation goal in mechanically ventilated critically ill patients with ARDS decreases the risk of prolonged coma and helps decrease in-hospital mortality in patients with severe ARDS.

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