changes of 12 per hour. The reduced air changes per hour in an airborne infection isolation room can also result in increased recirculation of aerosols, incomplete air mixing, and incomplete room air exchange.[5] In addition to prolonged aerosol exposure times, performance of aerosol-generating procedures in remote airborne infection isolation rooms have well recognised associated risks (i.e. unfamiliar equipment, limited resuscitation resources, crowded patient access, and increased hazards during transport to the operating room).[6] The main reason for recommendations that aerosol-generating procedures be performed in an airborne infection isolation room rather than in an operating room is to limit spread of viral aerosols outside the room, but there may be a greater risk of anaesthetists being exposed to viral aerosols when performed in an airborne infection isolation room than in the operating room. Before instituting any safety measures, clinicians and policy makers should objectively evaluate the dynamic behaviour of aerosols within their own operating room and airborne infection isolation room ventilation systems to maximise safety for their healthcare workers.

Declarations of interest

The authors declare that they have no conflicts of interest.

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Sevoflurane may not be a complete sigh of relief in COVID-19

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Keywords: COVID-19; ICU; malignant hyperthermia; sedation; sevoflurane; volatile anaesthetics

Editor—We read with interest the editorial by Nieuwenhuijs-Moeke and colleagues[1] on the use of sevoflurane as an ICU sedative in patients admitted with coronavirus disease 2019 (COVID-19). We were surprised that there was no mention of the potential for a fatal episode of malignant hyperthermia (MH) when using a volatile anaesthetic agent as a sedative in the ICU. Although rare, cases of MH triggered in the ICU do occur.[2] Unpublished data from the UK MH unit in Leeds show that there have been two patients referred in the past 5 yr after an MH episode as a result of exposure to a volatile anaesthetic agent in the ICU: in both cases the volatile anaesthetic was used to alleviate status asthmaticus. In one case the volatile anaesthetic was isoflurane, and in the other, sevoflurane. As reported,[3] sevoflurane is now the most common triggering agent in new cases referred to the UK MH unit, supplanting isoflurane. However, isoflurane remains the most common triggering agent over the past 30 yr.

We do not suggest that the possibility of an MH reaction should be the overriding factor in the choice of ICU sedative, but use of volatile anaesthetics in this setting should be accompanied by education of ICU staff in the recognition and management of an MH reaction.[4] Display of visual aids for diagnosis and management in the relevant bed space might also be considered (these can be downloaded from www.ukmhr.ac.uk). Furthermore, it should be noted that an MH reaction within the ICU may be more difficult to diagnose than in the operating theatre because of a high incidence of conditions that are associated with clinical features of MH

(hypercarbia, tachycardia, raised temperature, hypoxaemia, acidosis, hyperkalaemia[4]), such as sepsis, respiratory failure, or acute kidney injury: these clinical features are also frequently observed in critically ill patients with COVID-19.[5] Also adequate stocks of dantrolene[6] and activated charcoal filters[7] should be available.

Population genome and exome sequencing projects have revealed the high population incidence (1:1500) of genetic variants associated with susceptibility to MH.[8] It is likely that there are genetic and non-genetic factors contributing to the discrepancy between the prevalence of such genetic variants and the incidence of clinical MH,[9] but these are unknown. It is possible that the non-genetic contributors to triggering may be more common in critically ill patients, so although the current low incidence of MH in the ICU setting is likely to reflect the infrequent use of volatile anaesthetic sedation, an increase in this practice may reveal that critically ill MH susceptible patients have a greater chance of triggering than in the operating theatre.

As volatile anaesthetic sedation becomes more prevalent, intensivists and ICU nurses should be added to anaesthetists, pre-hospital practitioners, and emergency room physicians in the list of practitioners who need to be explicitly aware that MH reactions still occur, and can be triggered by use of any of the volatile anaesthetic agents, including methoxyflurane,[10] and by the depolarising neuromuscular blocking agent succinylcholine.[4]

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Declarations of interest

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Neuraxial anaesthesia in the context of bacterial meningitis and COVID-19

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Keywords: COVID-19; meningitis; neuraxial anaesthesia; regional anaesthesia; SARS-CoV-2; spinal anaesthesia

Editor—Recommendations to limit airway instrumentation and mechanical ventilation in coronavirus disease 2019 (COVID-19) patients suggest an expanded role for regional anaesthesia.[1,2] The complex considerations stemming from the COVID-19