Analgesia and Sedation in Patients with COVID-19

Approximately 14 percent of patients with COVID-19 infection experience a severe form of hypoxic respiratory failure, with 5 percent requiring mechanical ventilation.[1] The dyspnea, air hunger, physical discomfort of being intubated, and need to prevent self-extubation have made sedation of these patients challenging, with many requiring high doses of multiple medications to achieve comfort. Moreover, in the subset of patients with low lung compliance and acute respiratory distress syndrome, use of low tidal volumes, controlled ventilation, and prone positioning require high levels of sedation and often neuromuscular blockade to permit proper ventilation.[2,3]

Standard critical care management involves daily interruption of sedation, which reduces the number of days on the ventilator.[4] Attention to sedation is important in the COVID-19 pandemic both for optimal patient care and because sedative and analgesic medications are in high demand. In March, the demand for sedatives increased by 91 percent, for analgesics by 79 percent, and for neuromuscular blockers by 105 percent.[5]

At present, sedation/analgesia regimens are based on standard critical care guidelines, with some adaptations to the environment. For patients who are not intubated, bolus dosing of hydromorphone or fentanyl for analgesia and midazolam for sedation/anxiolysis are effective first-line agents. A dexmedetomidine infusion is another option to provide light to medium sedation while allowing intermittent patient wakefulness and is effective in patients at risk for or experiencing alcohol withdrawal.

In intubated patients, a fentanyl infusion is commonly used initially for analgesia, but because of fentanyl's lipophilic properties and tachyphylaxis with long-term use, hydromorphone is a good alternative, with the advantage of being least affected by organ dysfunction. For sedation, propofol is the usual first choice, with supplementation by intravenous boluses of a benzodiazepine. When heavy sedation is required, a midazolam or ketamine infusion may be added. For ventilator dyssynchrony despite adequate sedation, bolus doses of neuromuscular blockers are preferable to continuous infusions.

To spare intravenous medications to prevent or manage drug shortages, bolus dosing of phenobarbital, a barbiturate with a long half-life, may be used on a short-term basis. Enteric medications also frequently are used to spare intravenous supplies, including oxycodone and gabapentin for pain, and lorazepam or diazepam for sedation and anxiety. Melatonin also has been reported in COVID-19 patients to spare sedatives and treat agitation.[6] The message for sedation and analgesia in the pandemic is to follow our usual evidence-based critical care guidelines, but be flexible and creative if adjunctive therapy is needed based on the patient's response to initial treatment.

References

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