New Insights about an Old Foe

THERE are few concerns more central to the anesthesia community than avoiding the pulmonary aspiration of gastric contents. Although numerous other topics populate the pages of the specialty’s journals, the appearance of a new article about aspiration risk can be immediately appreciated for its relevance. Aspiration is a familiar and long-standing concern, but there is more to learn about how to prevent it. In this month’s issue of Anesthesiology, Dr. Turan et al. report their findings on the effects of two modern sedative agents, dexmedetomidine and propofol, on lower esophageal sphincter pressure and the gastroesophageal pressure gradient. Their investigation suggests that both drugs decrease lower esophageal sphincter pressure similarly and dose dependently and that the gastroesophageal pressure gradient changes little. That is, both drugs might increase the risks of aspiration of gastric contents, but the physiologic changes on the gastroesophageal junction are minimal.

The authors studied a range of doses, titrated mathematically as target-controlled infusions, monitored the Bispectral Index, and also used a clinical sedation scale. Correlation to the American Society of Anesthesiologists definitions of levels of sedation* is not evident. Their measures of lower esophageal sphincter pressure and gastroesophageal pressure gradient are appropriate and validated, and the power of the sample to measure a meaningful difference is reasonable, although the completed sample (8) was lower than the calculated size (11). Dexmedetomidine and propofol can, in theory, increase aspiration risk by worsened function of the gastroesophageal barrier, but the magnitude of the effects are small and both drugs affect the function similarly.

These findings raise issues in the debate on aspiration risk that could transform it. Aspiration of gastric contents, for all the concerns about it, is a rare phenomenon. This rarity may reflect the excellence in clinical practice or the relatively low risk for aspiration in most patients. Why then is the anesthesia community so interested in aspiration of gastric contents? First, the consequences of severe aspiration, according the American Society of Anesthesiologists definitions of sedation, are not evident. Their measures of lower esophageal sphincter and gastroesophageal pressure gradient refocus aspiration concerns to the stomach. Recent studies have highlighted the role of the aspiration of pharyngeal contents in postoperative complications5,6 and strongly suggest that pharyngeal secre-


Accepted for publication September 2, 2009. The authors are not supported by, nor maintain any financial interest in, any commercial activity that may be associated with the topic of this article.

tions may be the agents causing pulmonary complications. These studies evaluated neuromuscular blocking agents, finding that even small levels of neuromuscular blockade impaired pharyngeal reflexes, and residual neuromuscular blockade correlated with pulmonary complications. To date, this line of inquiry with sedative and hypnotic agents has been minimally explored.

The article by Turan et al. will be of interest to three audiences. First, for the anesthesia community, new discoveries confirm the need for constant vigilance to avoid a critical complication. Second, for nonanesthesia providers who provide sedation, new insights into drugs and aspiration risk will inform debates about what types of medications and what levels of sedation are appropriate to their practice. Last, for members of the scientific community, new and relevant discoveries are welcome. For the first group, the study underscores the need to look for factors contributing to aspiration risk and to advocate for a wide margin of safety regarding this complication. For the second group, this study does little to change the widely held belief about propofol and dexmedetomidine: They are generally safe in healthy patients with empty stomachs. As the authors state, “clinicians might better focus on other side effects of propofol and dexmedetomidine, such as respiratory depression and bradycardia.” For the last group, these findings promote ongoing discussions about aspiration risk with other medications and combinations of medications, other mechanisms, and a reconciliation of physiologic findings to clinical outcomes.

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Anesthesiology, V 112 • No 1 • January 2010