Aspiration Following Elective Intubation

To the Editor:

We have additional findings regarding our study in CHEST (May 2013) of gastric-to-pulmonary aspiration in adult surgical patients undergoing elective intubation. The original study used an enzymatic assay for identification of pepsin A. Since publication, our group has validated an enzyme-linked immunosorbent assay (ELISA) for pepsin A, which we subsequently used to analyze the same airway samples collected in our previous study. 1

Briefly, pepsin A was detected by incubating with biotin-conjugated polyclonal antibody against porcine pepsin A (Abcam plc) that recognizes human pepsin A. The bound biotin-polyclonal antibody was detected by adding HRP-streptavidin (Abcam plc). The ELISA sensitivity threshold is 0.1 ng/mL compared with the sensitivity threshold of 25 ng/mL for the pepsin A enzymatic assay. In our original publication, we reported a 0% rate of aspiration using the enzymatic assay for pepsin A.1 However, using the more sensitive ELISA on the same airway samples, we have detected a 4% rate of aspiration. The ELISA is more sensitive than the enzymatic assay, likely due to its ability to detect partially degraded pepsin A. Thus, it appears that although the rate of gastric-to-pulmonary aspiration is very low (4% in adults without risk factors for aspiration undergoing elective intubation), it is higher than previously reported using the enzymatic assay for pepsin A.

Furthermore, in a different sample of 16 adult surgical patients with risk factors for microaspiration (including BMI > 30 kg/m², diabetes, or gastroesophageal reflux disease), 2,3 we used the recently validated ELISA and discovered a rate of gastric-to-pulmonary aspiration of 12.5% (as indicated by the presence of pepsin A in the airway) following elective intubation. The number of subjects in the study was insufficient to statistically determine whether the rate of aspiration in those with risk factors for microaspiration (12.5%) is greater than in those without risk factors for microaspiration (4%).

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References

