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## Statin Therapy before Cardiac Surgery: Neutral or Detrimental Effects?

To the Editor:

We read the interesting large retrospective study by Komatsu *et al.* on preoperative chronic statin use in patients undergoing coronary artery bypass grafting, valve surgery, or combined procedures.<sup>1</sup> Chronic statin therapy was associated with no significant difference in prolonged mechanical ventilation, pneumonia, in-hospital mortality, neurologic outcome, and length of intensive care unit or hospital stay,<sup>1</sup> suggesting neutral effects on postoperative clinical outcome.

It would be interesting to know the incidence of acute kidney injury after surgery in the study by Komatsu *et al.*<sup>1</sup> It is well known that postoperative acute kidney injury is crucial in patients' postoperative course and is associated with higher mortality rate.<sup>2</sup> Two large, high-quality, randomized placebo-controlled trials were recently published, respectively, in the *New England Journal of Medicine* and *JAMA*. Zheng *et al.*<sup>3</sup> randomly assigned 1,922 cardiac surgery patients to receive perioperative rosuvastatin or placebo, started 1 to 8 days before surgery, and the authors found that perioperative statins did not prevent postoperative atrial fibrillation or perioperative myocardial damage, but acute kidney injury was more common in patients receiving rosuvastatin. Billings *et al.*<sup>4</sup> randomized 617 patients to high-dose perioperative atorvastatin or placebo, started the day before surgery, and found increased acute kidney injury in statin-naïve patients with chronic kidney disease. A recent systematic review and meta-analysis of randomized controlled trials with low risk of bias found that perioperative statin therapy was associated with an increased incidence of postoperative acute kidney injury as compared with placebo, with 314 of 1,318 patients (23.82%) in the statin group having acute kidney injury *versus* 262 of 1,319 patients (19.86%) in the placebo group (odds ratio 1.26 [95% CI, 1.05 to 1.52];  $P = 0.01$ ).<sup>5</sup> Notably, a trend toward increased mortality was noted in the statin group: 9 of 1,318 (0.68%) patients died in the statin group *versus* 2 of 1,319 (0.15%) in the placebo group (odds ratio 1.26 [95% CI, 1.05 to 1.52];  $P = 0.06$ ).<sup>5</sup> Since the trials included in the meta-analysis randomized patients to a short course of preoperative statin regimen (between 1 and 7 days), we would like to ask Komatsu *et al.* for further data regarding length of preoperative statin therapy and, if available, a stratification according to it (*e.g.*, short-term *vs.* long-term statins administration).

In conclusion, there is growing high-quality evidence<sup>3–5</sup> that suggests not administering statins in the days before cardiac surgery. Statins in the days before cardiac surgery are not

This letter was sent to the author of the original article referenced above, who did not respond.—Evan D. Kharasch, M.D., Ph.D., Editor-in-Chief

only unuseful, as also suggested by the observational study of Komatsu *et al.*,<sup>1</sup> but are harmful to renal function,<sup>2-4</sup> and a detrimental effect on survival could not be excluded.<sup>4</sup> There is a compelling need for further large, high-quality, randomized placebo-controlled trials to confirm these findings and to assess the most appropriate time-point of statin discontinuation before cardiac surgery.

## Competing Interests

The authors declare no competing interests.

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## Neurocritical Care Needs Predictive Scores That Succeed at Predicting Failure as Well as They Predict Success

To the Editor:

In the August 2017 issue of *ANESTHESIOLOGY*, Asehnoune *et al.* report their derivation of a novel bedside scoring system to predict extubation success in the intubated brain-injured patient.<sup>1</sup> Many brain-injured patients are likely exposed to excess ventilated days because they do not meet extubation criteria originally established in general intensive care unit (ICU) populations.<sup>2</sup> Careful consideration is required, however, before routinely utilizing new extubation prognostication

scores. Although the VISAGE (visual pursuit, swallowing, age, Glasgow coma scale for extubation) score performs well at predicting extubation success based on favorable neurologic indicators, it does not adequately predict which patients will fail extubation due to neurologic dysfunction.

Recovery of arousal and airway protective reflexes after neurologic injury often is slow, and a subset of patients will benefit from early tracheostomy without an extubation attempt. The VISAGE score poorly discriminates extubation success among patients with low scores. Based on this model, a patient under 40 yr old without visual pursuit or swallowing efforts, and with a Glasgow coma scale less than 10, would have an almost 60% chance of extubation success. Barring a prediction of rapid neurologic improvement or barriers to safe reintubation, we believe that this individual should undergo a trial extubation. We are concerned that adoption of a scoring system with explicit or perceived cut-points would lead to such patients remaining intubated longer than necessary. A similar problem arises from the predictive score introduced in *ANESTHESIOLOGY* earlier this year by Godet *et al.*<sup>3</sup> Although their regression-based score has a clear inflection point, fully one third of patients below this score were successfully extubated. At the suggested cut-point, their score falls short of the degree of negative predictive value originally reported for the Rapid Shallow Breathing Index (RSBI) in a general ICU population.<sup>4</sup> The negative predictive value for the VISAGE score at a cut-point of 3 performs even worse.

Timely extubation of all ICU patients, including those with brain injury, helps prevent ventilator-associated complications. Although our colleagues highlight that brain-injured patients can be safely extubated, we caution against rigorously applying these scores due to the possibility of excess mechanical ventilation for patients who score poorly. Extubation failure and reintubation is certainly not without risk and is predictive of worse outcomes, though causality has not been established.<sup>1,5</sup> Further development of scoring models with improved negative predictive values is needed to identify patients who should truly forgo trial extubation. Until these risks are further quantified, and such a tool is developed, the neurocritical care intensivist will necessarily have to tolerate and manage higher reintubation rates than those seen in a general ICU population.

## Competing Interests

The authors declare no competing interests.

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