Clinical impact ratings: ★★★★★ ★★★★★★★★★★

Question
Does perioperative statin treatment improve clinical outcomes in adults having surgery and not using long-term statins?

Review scope
Included studies evaluated perioperative statin treatment in patients ≥ 18 years of age who were having surgery and were not maintained on long-term statin treatment before surgery (statin-naïve). Exclusion criteria included percutaneous coronary interventions and cardioversions. Studies had to report ≥ 1 of the following outcomes: perioperative death, myocardial infarction (MI), atrial fibrillation (AF), length of hospital stay, or length of intensive care unit (ICU) stay.

Review methods
MEDLINE, EMBASE/Excerpta Medica, Biosis, Cochrane Central Register of Controlled Trials, Conference Proceedings Index, Web sites (ClinicalTrials.gov, International Federation of Pharmaceutical Manufacturers, and Pharmaceutical Research and Manufacturers of America), and reference lists were searched to April 2011 for published and unpublished randomized controlled trials (RCTs). Experts and study authors were contacted. 15 RCTs (n = 2292, 59% to 90% men) met inclusion criteria. Studies enrolled patients having cardiac surgery (11 RCTs, n = 1056), noncardiac surgery (2 RCTs, n = 1030), and vascular surgery (2 RCTs, n = 206). 14 studies used a placebo control, and 1 study compared high-dose with low-dose atorvastatin. Statins assessed were atorvastatin (8 RCTs, n = 121), rosuvastatin (1 RCT, n = 200), and pravastatin (1 RCT, n = 43). 7 studies were at low risk for bias (Cochrane Statistical Methods Group criteria).

Main results
Compared with controls, perioperative statins reduced risk for MI in patients having any surgery and AF in patients having cardiac surgery; groups did not differ for mortality in patients having any surgery (Table). Perioperative statins reduced length of hospital stay, but not length of ICU stay, more than controls (Table).

Conclusion
Perioperative statins reduce risk for myocardial infarction and atrial fibrillation in statin-naïve patients.

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Commentary
In a systematic review of 15 perioperative trials in statin-naïve patients, including 1236 noncardiac and 1056 cardiac surgery patients, Chopra and colleagues reported relative risk reductions of 47% for MI and 44% for AF with statins compared with control therapy.

Should noncardiac surgery patients receive statin therapy? 1030 of the 1236 noncardiac surgery patients were from the DECREASE III and IV trials (2, 3). The senior researcher of those trials was recently fired for academic misconduct. The investigation committee noted serious protocol violations in the trials in source documentation and outcome determination (4), which raises questions about the validity of these data.

Approaches for preventing perioperative vascular complications have been dominated by expert opinion, observational studies, small RCTs, and meta-analyses. Because of the gap between the magnitude of the problem and evidence for therapy, there has been a tendency to embrace interventions based on weak data. Although it is reasonable to give statins to patients having surgery, large trials are needed to determine whether this is the right course of action.

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References