

Perioperative use of atorvastatin reduced cardiovascular events in patients having vascular surgery

Durazzo AE, Machado FS, Ikeoka DT, et al. **Reduction in cardiovascular events after vascular surgery with atorvastatin: a randomized trial.** *J Vasc Surg.* 2004;39:967-76.

QUESTION

In patients having vascular surgery, does perioperative use of atorvastatin reduce cardiovascular events?

METHODS

Design: Randomized placebo-controlled trial.

Allocation: {Concealed}†.*

Blinding: Blinded [clinicians, patients, data collectors, and outcome assessors]†.*

Follow-up period: 6 months.

Setting: University hospital in São Paulo, Brazil.

Patients: 100 patients (mean age 67 y, 79% men) who were having elective noncardiac arterial vascular surgery. Exclusion criteria included contraindication to statin use.

Intervention: Atorvastatin, 20 mg/d ($n = 50$), or placebo ($n = 50$), for 45 days irrespective of serum cholesterol level. All patients also received standard care. Patients had vascular surgery not earlier than 2 weeks after inclusion in the study.

Outcomes: Composite endpoint of cardiovascular events (death from cardiac causes, nonfatal acute myocardial infarction [MI],

ischemic stroke, or unstable angina) and individual cardiovascular endpoints.

Patient follow-up: 100% (intention-to-treat analysis).

MAIN RESULTS

Patients had vascular surgery at a mean 31 days after the start of the study medication. Patients who received atorvastatin had a lower risk for the composite endpoint of cardiovascular events than did patients who received placebo, but the groups did not differ for rates of the individual endpoints of death from cardiac causes, nonfatal acute MI, ischemic stroke, or unstable angina (Table).

CONCLUSION

In patients having vascular surgery, perioperative use of atorvastatin reduced the composite endpoint of cardiovascular events (death from cardiac causes, nonfatal acute myocardial infarction, ischemic stroke, or unstable angina) at 6 months.

Source of funding: Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP).

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*See Glossary.

†Information provided by author.

Atorvastatin vs placebo in patients having vascular surgery at 6 months†

Outcomes	Atorvastatin	Placebo	RRR (95% CI)	NNT (CI)
Composite cardiovascular endpoint [‡]	8%	26%	69% (18 to 89)	6 (4 to 30)
Death from cardiac causes	2%	4%	50% (-271 to 93)	Not significant
Nonfatal acute myocardial infarction	6%	16%	63% (-22 to 89)	Not significant
Ischemic stroke	0%	4%	100% (-87 to 100)	Not significant
Unstable angina	0%	2%	100% (-278 to 100)	Not significant

‡Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.

[‡]Composite cardiovascular endpoint = death from cardiac causes, nonfatal acute myocardial infarction, ischemic stroke, or unstable angina.

COMMENTARY

Noncardiac surgery is associated with substantial cardiac morbidity and mortality. Despite this, few randomized controlled trials (RCTs) have evaluated interventions to prevent major cardiovascular events in patients having noncardiac surgery. Although several authors have advocated use of perioperative β -blockers, the supporting RCT evidence is limited (1), and a recent RCT of β -blockers in vascular surgery ($n = 496$) failed to show any positive effect on cardiovascular outcomes (2).

Interest in the potential benefits of perioperative statin therapy has recently arisen. A retrospective cohort study ($n = 780\ 591$) and a case-control study ($n = 2816$) have suggested that the use of statin therapy reduces the risk for perioperative death (3, 4). Durazzo and colleagues report the first RCT on perioperative statins. Their study suggests that perioperative atorvastatin reduces the risk for adverse major cardiovascular events after vascular surgery.

Although encouraging, their findings raise several causes for concern about reliability. The trial included only 100 patients, and few events occurred (i.e., 3 cardiac deaths and 11 nonfatal MIs). The trial suggested a large treatment effect (i.e., a relative risk reduction [RRR] of 69% for major adverse cardiovascular events). However, the treatment effect is inconsistent with the results of RCTs of statins in primary and secondary prevention of cardiovascular events (5). These trials have randomized > 50 000 patients and have shown moderate treatment effects (i.e., RRRs of 15% to 30%).

The evidence that perioperative statin therapy reduces adverse cardiovascular outcomes is modest but encouraging. It does not warrant a recommendation for the routine use of perioperative statins, but it identifies the need and provides the impetus for a large, adequately powered RCT to definitively establish the effect of perioperative statin therapy, as is the case with perioperative β -blockers.

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