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Postoperative Statin Use and Lower LDL Cholesterol Concentration Are Associated with Reduced Incidence of Stroke

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Background: Postoperative stroke remains a catastrophic and costly complication of coronary artery bypass grafting (CABG). Prior work has demonstrated a significant reduction in the rate of stroke associated with statin use in the nonoperative setting. We evaluated the effect of postoperative statin use and LDL cholesterol concentration (LDL-C) on the incidence of stroke following CABG.

Methods: The Cleveland Clinic cardiothoracic surgery database was used to identify 5,205 consecutive patients who underwent first-time, isolated CABG from 1/1993 to 12/2005. Patients with a prior history of atrial fibrillation, known clotting disorder, or requirement for anticoagulation were excluded from analysis. Discharge medications, including statins, were prospectively col-

lected. Patients were divided into groups based upon serum LDL-C: < 70 mg/dL, 70 to 100, 101 to 130, or > 130.

Results: The overall incidence of postoperative stroke at 1 year was 3.3% (181 events). Patients discharged on statin therapy were more likely to have a lower LDL-C and were significantly less likely to suffer a postoperative stroke at 1 year (**Table**). Multivariate logistic regression identified age (HR 1.05 [1.024, 1.075]; $P < .001$), peripheral vascular disease (1.89 [1.233, 2.891]; $P < .004$), and renal disease (2.79 [1.654, 4.709]; $P < .001$) as independent predictors of the combination of stroke, MI, or death. Use of both statin (0.366 [0.177, 0.757]; $P < .007$) and ACE inhibitor (0.545 [0.36, 0.82]; $P < .003$) therapies significantly reduced this risk.

Conclusions: In patients undergoing first-time, isolated CABG, postoperative statin therapy was associated with lower LDL-C concentration, which significantly reduced the risk of stroke as well as the composite end point of death, MI, or stroke. These data suggest that a discharge regimen including statin therapy may reduce postoperative morbidity and warrants prospective validation.

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TABLE

LDL-C	< 70 mg/dL	71–100 mg/dL	101–130 mg/dL	> 130 mg/dL	P value
Beta-blocker	46/75 (61.3)	97/171 (56.7)	163/308 (52.9)	257/510 (50.4)	.218
Statin	*37/75 (49.3)	*52/171 (30.4)	76/308 (24.7)	108/510 (21.2)	< .001
ACE inhibitor	34/75 (45.3)	66/171 (38.6)	78/308 (25.3)	105/510 (20.6)	< .001
Aspirin	66/75 (88.0)	145/171 (84.8)	268/308 (87.0)	451/510 (88.4)	.656
Calcium channel blocker	22/75 (29.3)	44/171 (25.7)	71/308 (23.1)	121/510 (23.7)	.665
Warfarin	4/75 (5.3)	8/171 (4.7)	18/307 (5.9)	24/510 (4.7)	.895
Amiodarone	7/75 (9.3)	10/171 (5.8)	15/307 (4.9)	12/510 (2.4)	.098
Antiarrhythmic	7/75 (9.3)	28/171 (16.4)	54/307 (17.6)	85/510 (16.7)	.380
Antiplatelet	2/75 (2.7)	4/171 (2.3)	5/306 (1.6)	11/507 (2.2)	.853
Outcome at 1 year					
Stroke	2/139 (1.4)	6/388 (1.5)	22/706 (3.1)	54/1,272 (4.2)	.033
Death/MI	20/139 (14.4)	70/388 (18.0)	122/706 (17.3)	218/1,272 (17.1)	.808
Death/stroke/MI	22/139 (15.8)	74/388 (19.1)	139/706 (19.7)	270/1,272 (21.2)	.407

Values inside parentheses are percentages.

* Significant difference between groups ($P < .01$).