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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 collected. 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 ($P < .01$).