

# Predictors of Early Postoperative Cerebral Infarction After Isolated Off-Pump Coronary Artery Bypass Grafting

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*Background.* Risk factors associated with cerebral infarction within 7 days after off-pump coronary artery bypass grafting require further statistical elucidation.

*Methods.* From January 1997 to July 2006, off-pump coronary artery bypass grafting was performed in 576 patients at Toyama University Hospital. Factors including previous cerebral infarction, lesions in head and neck vessels, preoperative cerebral ischemic symptoms, intraaortic balloon pump use, number of coronary lesions, number of coronary bypasses, sites of coronary bypasses, number of proximal anastomoses in the ascending aorta, use of aortic no-touch procedure, partial aortic clamping, automatic proximal anastomosis devices, and a proximal seal system were compared retrospectively between patients with and without early cerebral infarction. Factors differing between groups were analyzed further by multivariate logistic regression.

*Results.* Ten patients (1.7%) had cerebral infarction within 7 days after surgery. The subjects were divided into two groups, those who had cerebral infarction after surgery ( $n = 10$ ) and those who did not ( $n = 566$ ). Factors showing significant intergroup differences were a previous history of cerebral infarction ( $p < 0.001$ ), preoperative presence of cerebral ischemic symptoms ( $p < 0.001$ ), vascular lesions in head and neck vessels ( $p < 0.001$ ), use of partial aortic clamping ( $p = 0.002$ ), and postoperative atrial fibrillation within 7 days after surgery ( $p = 0.011$ ). Multiple logistic regression analysis indicated close relationships between previous history of cerebral infarction (odds ratio, 26.6; 95% confidence interval, 2.8 to 251.1;  $p = 0.004$ ), preoperative presence of cerebral ischemic symptoms plus lesions in head and neck vessels (odds ratio, 22.8; 95% confidence interval 1.8 to 285.7;  $p = 0.015$ ), and use of partial aortic clamping (odds ratio, 11.1; 95% confidence interval, 1.4 to 85.7;  $p = 0.021$ ). Postoperative atrial fibrillation within 7 days after surgery (odds ratio, 3.4; 95% confidence interval, 0.7 to 16.5;  $p = 0.121$ ) was suspected as a risk factor for postoperative cerebral infarction.

*Conclusions.* Multivariate analysis identified independent factors strongly associated with cerebral infarction after off-pump coronary artery bypass grafting, such as partial aortic clamping, presence of cerebral ischemic symptoms plus head and neck vascular lesions, and previous cerebral infarction.

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