SCA 35

DETERIORATION OF REGIONAL WALL MOTION IMMEDIATELY FOLLOWING CABG SURGERY IS ASSOCIATED WITH LONG-TERM MAJOR ADVERSE CARDIAC EVENTS

De Meyts D, Swaminathan M, Podgoreanu M, Booth J, Morris R, Clements F, Grocott H, Newman M, Mathew J
Duke University Medical Center, Durham, NC, USA

Introduction: New-onset regional wall motion abnormalities (WMA) following cardiopulmonary bypass (CPB) have been associated with pre-discharge adverse outcomes in CABG patients.1 The prognostic value of WMA has been further validated in the setting of chest pain and acute myocardial infarction (MI). We therefore postulated that deterioration in wall motion after CPB would also be associated with long-term major adverse cardiac events (MACE).

Methods: Following IRB approval, detailed clinical and transesophageal echocardiography (TEE) data were gathered from prospectively entered databases in all patients undergoing CABG with CPB between September 1, 2000 and June 30, 2003. Patients were excluded from study if they were undergoing redo or combined surgical procedures, or received preoperative inotropes or an intraaortic balloon pump. Left ventricular wall motion by TEE was graded in a 16-segment model as Normal = 1, Hypokinesis = 2, Akinesis = 3, and Dyskinesis = 4. A wall motion score (WMS) was then derived by summing the scores for each segment and dividing by the total number of segments (WMS of 1 = normal motion). Septal segments were excluded from determination of WMS in cases of ventricular pacing. All TEE studies were reviewed by a single, independent operator with >10 years experience in TEE. MACE were defined as MI, need for subsequent coronary revascularization, or death following surgery. Statistical analysis was performed using a Cox proportional hazards model controlling for the Hannan risk score. Analyses were conducted using SAS (version 8.2, Cary, NC); a P-value < 0.05 was considered significant.

Results: Of the 1615 patients that met inclusion criteria, 220 experienced MACE. The mean age of the study population was 63.5 (10.8) years and 72% were male. Diabetes was present in 27% while 14% had an ejection fraction < 35%. Both a percent change in WMS (p=0.02) and the Hannan score (p<0.001) were significantly associated with the occurrence of MACE. Patients with WMS deterioration had a hazard ratio of 2.09 (95% CI: 1.11-3.94) for MACE. The lower probability of MACE free survival for patients with deterioration of WMS compared to those with no change or improvement in WMS is shown in Figure 1.

Discussion: A greater number and/or severity of regional wall motion abnormalities following CPB is associated with a higher incidence of major adverse cardiac events up to two years after CABG surgery. Intraoperative TEE may improve the long-term risk characterization of patients undergoing CABG surgery.

References:

1. Leung et al. Anesthesiology 1989; 71:16-25