

CARDIOVASCULAR DISEASE

Early Invasive Management of Acute Myocardial Infarction

Early, aggressive, invasive management of acute myocardial infarction (AMI) may result in reduced long-term mortality when compared with a more conservative approach. These were the findings of a prospective, observational, cohort study conducted by researchers from Vestfold Hospital Trust, Toensberg, Norway; Rikshospitalet University Hospital and University of Oslo, both in Oslo, Norway; and University of Edinburgh, Edinburgh, United Kingdom.

During two one-year periods, all patients referred to the researchers' hospital with suspected AMI were registered for inclusion in the study. A diagnosis of AMI was made in the presence of typical symptoms and troponin T levels of 0.1 µg/L or greater. ST-segment elevation myocardial infarction (STEMI) was defined by persistent ST-segment elevation occurring in two adjacent leads. Patients without persistent ST-segment elevation were classified as having non-STEMI (NSTEMI).

Patients admitted between February 1, 2003 and January 31, 2004—before new guidelines regarding percutaneous coronary intervention (PCI) were implemented in the hospital—comprised the conservative strategy (CS) cohort. Patients

admitted between February 15, 2006 and February 14, 2007 comprised the invasive strategy (IS) cohort.

Patients with STEMI in the CS cohort were treated with fibrinolysis. If fibrinolysis was successful, patients were referred for coronary angiography only in the presence of symptoms or objective evidence of ischemia. Patients with STEMI in the IS cohort who reported symptoms for less than 12 hours and who could be transferred to an invasive treatment center in less than 90 minutes of presentation were scheduled for primary PCI. In both groups, patients who were treated with fibrinolytic therapy and had less than 50% ST-segment recovery or had recurrent symptoms after 60 minutes were transferred for rescue PCI.

For patients with NSTEMI in the CS cohort, only those with ongoing ischemic symptoms accompanied by ST-segment depression or negative T waves were transferred for invasive management within the first 48 to 72 hours. Patients with NSTEMI in the IS cohort were referred for coronary angiography within the first 48 to 72 hours regardless of symptoms or evidence of ischemia.

During the CS cohort recruitment period, 755 patients were admitted for AMI: 126 with STEMI and 185 with NSTEMI. During the IS cohort recruitment period, 934 patients were admitted for AMI: 107 with STEMI and 200 with NSTEMI. Among patients with STEMI, 61 (57%) of those in the IS cohort received primary PCI in less

than 72 hours, compared with four (3%) of those in the CS cohort ($P < .001$). Primary PCI was performed in 49 (25%) of the NSTEMI patients in the IS cohort, compared with eight (4%) of the NSTEMI patients in the CS cohort ($P < .001$).

For all patients with AMI, the mortality rate after one year was significantly higher in the CS cohort than in the IS cohort (27% versus 16%, respectively; $P = .001$). This statistical difference between the cohorts persisted for patients with STEMI (14% versus 4%, respectively; $P = .015$)—but not for those with NSTEMI (21% versus 15%, respectively; $P = .14$). As a whole, the IS cohort also had a 46% lower relative risk of death at one year after the researchers adjusted for age, gender, previous AMI, previous stroke, diabetes, smoking status, previous left ventricular systolic dysfunction, and serum creatinine level at admission.

The researchers say that possible confounding factors—including differences in the rate of smoking cessation between the cohorts and a greater prevalence of coronary artery disease in the CS cohort—could have affected the outcomes of their study. Nevertheless, their findings suggest that adopting a policy of routinely transferring patients with AMI to a high volume PCI center for early invasive therapy could help reduce mortality in this population. ●

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