Comparative Effectiveness of CABG versus PCI in Patients with Ischemic Heart Disease: insights from SWEDEHEART Registry

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Background: Several studies have compared CABG to PCI as revascularization treatment in patients with ischemic heart disease (IHD). However, it remains unclear which revascularization strategy carries survival benefits in the long-term.

Methods: We used data from the SWEDEHEART (Swedish Web-System for Enhancement and Development of Evidence-Based Care in Heart Disease Evaluated According to Recommended Therapies) registry for all hospital admissions at 13 cardiac care centers within Västra Götaland County in Sweden (∼20% of all SWEDEHEART data). The database contains >1000 clinical variables documenting the entire process of acute coronary hospital care. All patients hospitalized for stable angina or NSTE-ACS during the period 2000–2018 were included in the analysis. We used a propensity score-adjusted Cox proportional-hazards regression with hospitals as random-effect variables. We adjusted for patients' demographics, socio-economic status, traditional risk factors, comorbidities, the severity of coronary artery disease, left ventricular function, calendar year and medication at discharge. For sensitivity analysis, we used the instrumental variable estimator for the Cox proportional-hazards model (with treating hospital as a treatment-preference instrument) to simultaneously deal with the problems of unmeasured confounding and censoring of the outcome. The primary outcome was all-cause mortality.

Results: In total, 11,896 patients were included in the study. Of these, 3,129 (26.3%) were women. 20.4% had diabetes and 10.4% had a previous myocardial infarction. The mean age was 66.7±10.7, and 42.9% were >70 years old. 61.5% had three-vessel and/or left main disease. Median follow-up time was 5.7 years (range 1 day-18.2 years). Revascularization therapy after coronary angiography was PCI in 9449 (79.4%) and CABG in 2,447 (20.6%) patients. CABG patients were more likely to have diabetes, left main/multivessel disease and heart failure. The number of revascularized patients with PCI increased by 6.4% per calendar year ($P<0.001$). There were 2,481 (20.9%) deaths. CABG was associated with a lower risk of death compared to PCI (HR 0.81; 95% CI 0.69–0.95; P=0.011. We found no evidence for treatment heterogeneity between the revascularization strategy and age, gender, diabetes, heart failure and indication for revascularization (all P-interaction >0.05). Results from the sensitivity analysis support the conclusions from the primary model.

Conclusions: In hospitalized patients due to IHD, revascularization with CABG was associated with superior long-term survival compared to PCI.