Volume-outcome relationships in coronary artery bypass graft surgery patients: 5-year major cardiovascular event outcomes

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摘要

Abstract

OBJECTIVE: Using nationwide population-based data from Taiwan's National Health Insurance database, we examined the association between hospitals' coronary artery bypass grafting surgery volume and 5-year major adverse cardiovascular events. METHODS: We used Taiwan's National Health Insurance claims data linked to the Cause of Death file for the years approximately 1997 to 2004. All 5718 patients who underwent nonemergency coronary artery bypass grafting operations during 1997 through 1999 were classified into one of 4 hospital volume groups: 282 cases or less (low volume, n = 1584 patients), 283 to 517 cases (medium volume, n = 1317), 518 to 725 cases (high volume, n = 1437), and 726 cases or more (very high volume, n = 1380). RESULTS: Increasing hospital volume is associated with increasing 5-year major adverse cardiovascular event-free survival (72.0%, 75.5%, 76.9%, and 79.4% in low-volume, medium-volume, high-volume, and very high-volume hospitals, respectively). Cox regression analysis shows that increasing hospital volume predicts a systematic decrease in adjusted major adverse cardiovascular event hazard at 5 years. The 5-year major adverse cardiovascular event hazard ratios for high-volume and very high-volume hospitals were 0.884 (95% confidence interval, 0.809-0.965) and 0.811 (95% confidence interval, 0.728-0.904) relative to low-volume hospitals after adjusting for patient demographics and economic status, initial case severity, coronary artery bypass grafting procedure attributes, and hospital characteristics. CONCLUSIONS: The findings suggest that high-volume hospitals have some processes, infrastructure/personnel factors, or both that seem to produce not only better short-term outcomes but also better long-term outcomes.