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Appendix

Other Variables in the Database

Age, gender, body mass index (kg/m²), left ventricular ejection fraction, preoperative myocardial infarction, use of intravenous nitroglycerin, stroke, previous cardiac operation, diabetes, hypertension, renal failure (serum creatinine > 2.5 mg/dL), renal failure requiring dialysis, current congestive heart failure, congestive heart failure before current admission, COPD, intraaortic balloon pump, arrhythmia, prior percutaneous transluminal coronary angioplasty more than 6 months ago, percutaneous transluminal coronary angioplasty before admission, use of thrombolytics, coronary artery stent thrombosis, angina (Canadian Cardiovascular Society, CCS class), different degree of stenosis of coronary arteries, pathology of heart valves, active endocarditis, carotid and cerebrovascular disease, calcified ascending aorta, aorto-iliac disease, femoropopliteal disease diagnosed during cardiac catheterization, urgency of operation, and smoking history.

INVITED COMMENTARY

Among numerous risk factors, perioperative infection is identified as a major risk factor associated with prolonged ventilation after coronary artery bypass grafting (CABG). Aiming to reduce postoperative duration of mechanical ventilation, several questions have to be raised based on the presented results. (1) Is appropriate attention paid to local and systemic infection during the pre-, intra-, and postoperative period in day to day

clinical routine? (2) Can prophylactic measures reduce the incidence of infection and prolonged mechanical ventilation? (3) Does clinical and basic research associated with CABG focus on perioperative infection and prolonged mechanical ventilation to an adequate extent?

Perioperative use of antibiotic prophylaxis is clinical routine for CABG and has substantially reduced morbidity and mortality. However, the antibiotic regimens show

a wide variety between centers due to a lack of evidence based studies. Especially the use of specific antibiotic regimens for high risk patients should be considered and evaluated. Recent studies in patients with septic shock revealed that target site concentrations in interstitial tissue frequently fail to reach the minimal inhibitory concentration for many pathogens despite adequate serum levels. It seems at least possible that the well-known inflammatory response to cardiopulmonary bypass and extensive volume loading during and after surgery could be associated with similar ineffective interstitial concentrations of the prophylactic antibiotic. However, no data of continuous measurements of interstitial antibiotic concentrations during and after CABG are available to date. To reduce postoperative duration of mechanical ventilation, it might be of substantial benefit to focus on perioperative infection in clinical and basic research associated with cardiac surgery.

The article by Canver and Chanda identifies pre-, intra-, and postoperative risk factors associated with prolonged postoperative ventilation based on 8,802 consecutive patients undergoing primary CABG. The large data base should guarantee reliable results. Duration of

surgery, septic shock, and various extracardiac organ complications are clearly identified as main reasons for prolonged mechanical ventilation after CABG. Well-known preoperative comorbidities such as age, left ventricular dysfunction, COPD, etc, as well as prolonged CPB time, are reconfirmed by the presented data. However, according to the odds ratios, local infection and septic shock are the leading factors associated with prolonged mechanical ventilation after CABG. The clinically and economically very relevant results must not lead to the conclusion that CABG should be withheld from any particular high risk patient, since substantial benefit after CABG has been reported for this patient population by numerous authors.

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