Abstract

Association of Perioperative β-Blockade With Mortality and Cardiovascular Morbidity Following Major Noncardiac Surgery


Conclusion: Among propensity-matched patients undergoing noncardiac, nonvascular surgery, perioperative β-blocker exposure was associated with lower rates of 30-day all-cause mortality in patients with two or more Revised Cardiac Risk Index factors. No association between β-blocker exposure and outcome in patients undergoing vascular surgery could be demonstrated.

Summary: Current class I recommendations of the American Heart Association/American College of Cardiology Foundation Guidelines on Perioperative Evaluation and Care for Noncardiac Surgery with respect to β-blockers remain limited to continuation of pre-existing β-blocker therapy (Fleisher LA et al, Circulation 2009;120:e169-276). Studies addressing the use of perioperative β-blockade for noncardiac surgery differ with respect to whether in-hospital perioperative β-blockade can reduce cardiovascular events in patients undergoing noncardiac surgery. In addition, recent evidence suggests the use of perioperative β-blockade may be declining (Wingerd R, Circ Cardiovasc Qual Outcomes 2012;5:10-8). This perhaps reflects recent studies questioning the efficacy of long-term β-blockade in the stable outpatient (Devereux PJ et al, Lancet 2008;371:1839-47). Given recent trends in downward use of β-blockade, the authors sought to determine early perioperative outcomes with and without early perioperative exposure to β-blockers by using 30-day postoperative outcomes in patients undergoing noncardiac surgery. This retrospective cohort analysis evaluated exposure to β-blockers on the day of or after major noncardiac surgery. The study was a population-based sample of 136,745 patients who were 1:1 matched on propensity scores (370,805 matched pairs) and who were treated at 104 Department of Veterans Affairs medical centers from January 2005 through August 2010. The main outcome measure was all cause 30-day mortality and cardiac morbidity (cardiac arrest or Q-wave myocardial infarction). Overall 55,138 patients (40.3%) were exposed to β-blockers. Vascular surgical patients had the highest est β-blocker exposure, 67.7% of 13,863 patients undergoing vascular surgery (95% confidence interval [CI], 65.9%-67.5%). Of the 122,882 patients undergoing nonvascular surgery, β-blocker exposure was 37.4% (95% CI, 37.1%-37.6%; P < .001). With increasing numbers of Revised Cardiac Risk Index factors, β-blocker exposure increased: 25.3% (95% CI, 24.9%-25.6%) in those with no risk factors vs 71.3% (95% CI, 73.2%) in those with four or more risk factors (<P < .001). Death occurred among 1.1% and cardiac morbidity among 0.9% of patients. In the propensity-matched cohort, β-blocker Exposure was associated with lower mortality and cardiac morbidity (<RR, 0.73; 95% CI, 0.65-0.83; P < .001). Number needed to treat [NNT], 241; 95% CI, 173-397]. When stratified by cumulative numbers of Revised Cardiac Risk Index factors, β-blocker exposure was associated with significantly lower mortality among patients with two or three factors (<RR, 0.63; <P < .001; NNT, 106), three factors (RR, 0.47; P < .001; NNT, 41), or four or more factors (RR, 0.40; P < .001; NNT, 18). β-blocker exposure was also associated with a lower rate of nonfatal Q-wave infarction or cardiac arrest (RR, 0.67; P < .001; NNT, 339). No association could be demonstrated between β-blocker exposure and outcomes in vascular surgical patients with respect to mortality at 30 days and cardiac morbidity.

Association of β-blocker exposure with outcomes in patients undergoing noncardiac, nonvascular surgery is generally considered at the highest risk of mortality and cardiac morbidity. However, in this large and well-performed analysis, β-blocker exposure did not influence outcomes in vascular surgical patients. This may relate to a relatively small sample size compared with the nonvascular surgical cohort or to the possibility patients received medications not captured by the electronic database that was analyzed. In addition, vascular surgical patients may have received a higher level of postoperative care (intensive care unit utilization) than nonvascular patients. The American Heart Association/American College of Cardiology Foundation recommendation to continue perioperative β-blockade in patients undergoing noncardiac vascular surgery who are already taking β-blockers seems reasonable. Unfortunately, this study does not indicate the potential benefit of new institution of perioperative β-blockade in patients undergoing vascular surgery.

Inflammation in Complex Regional Pain Syndrome: A Systematic Review and Meta-Analysis


Conclusions: Complex regional pain syndrome (CRPS) is associated with a proinflammatory state in blood, blister fluid, and cerebral spinal fluid (CSF). Acute and chronic cases have different inflammatory profiles.

Summary: Clinically, CRPS is characterized by allodynia, severe pain, hyperalgesia, and autonomic signs and symptoms (Mannion J et al, Lancet Neurol 2011;10:637-48). The precise underlining mechanisms resulting in CRPS are unknown; however, a number of studies have suggested an inflammatory state of some sort characterizes both acute and chronic CRPS (Hygenen FJ et al, Immunol Lett 2004;91:147-154; and Grosenweg HG et al, BMC Musculoskelet Disord 2006;7:91). Identification of specific inflammatory modulators in acute and chronic forms of CRPS could guide therapy to modify specific inflammatory states and, potentially, improve CRPS symptom. The authors therefore conducted a systematic review and meta-analysis to determine whether CRPS is associated with a specific inflammatory profile. They also sought to determine whether such an inflammatory profile might be dependent on duration of the condition. A comprehensive search of the literature using online databases was performed. Articles that measured inflammatory factors in CRPS were identified. Two independent investigators screened titles and abstracts and also performed data extraction and risk of bias assessments. Studies were grouped by medium of fluid analyzed (blood, blister fluid, and CSF) and duration of the CRPS condition (acute vs chronic). When possible, meta-analysis of inflammatory factor concentrations was performed. Pooled effect sizes were calculated using random-effects models. The authors identified 22 studies for the review. Of the 22 studies included in the meta-analysis, CRPS, the concentration of interleukin (IL)-8 and soluble tumor necrosis factor receptors I and II were increased significantly in blood. In chronic CRPS, there were (1) significant increases in tumor necrosis factor-α, bradykinin, IL-1β, IL-11, IL-18, monocyte chemoattractant protein-1, and soluble receptor for advanced glycation end products in blood; (2) IL-1R7, monocyte chemoattractant protein-1, macrophage inflammatory protein-β, and IL-6 in blister fluid; and (3) IL-1β and IL-6 in CSF. Chronic CRPS was also associated with significantly decreased substance P, sE-selectin, sL-selectin, sP-selectin, and sGP100 in blood. There were also decreased levels of soluble intercellular adhesion molecule-1 in CSF.

Comment: The findings indicated that CRPS is associated with a proinflammatory state both acutely and chronically. In addition, the inflammatory states differ in the acute and chronic phase of CRPS. Sympathetism is often considered in the management of CRPS, but long-term results are inconsistent. The data suggest that medical management of CRPS targeting specific proinflammatory states has potential therapeutic efficacy. Whether this potential translates into clinical efficacy or could be combined with sympathetism to improve management of CRPS will require additional investigation.

Blood Transfusion for Lower Extremity Bypass Is Associated With Increased Wound Infection and Graft Thrombosis


Conclusion: Transfusion perioperatively in patients undergoing lower extremity bypass (LEB) is associated with increased perioperative graft thrombosis and wound infection.