

LEVOSIMENDAN IN HIGH RISK CARDIAC SURGERY.

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Objectives: Postcardiotomy low-output heart failure is a major problem after high risk cardiac surgery. Conventional inotropic support is associated with increased myocardial oxygen consumption and arrhythmias. Ca^{2+} -sensitizers augment cardiac contractility with less increase in oxygen consumption, and is safe and effective in the treatment of acute exacerbation of chronic heart failure. We report our initial experience with use of the Ca^{2+} -sensitizer levosimendan (Simdax®) in high risk cardiac surgery.

Material and Methods: From January 2004 through December 2005, levosimendan was used in 65 patients (age 67+/-11 years, 40 males) undergoing high risk cardiac surgery. The indications for levosimendan were: 1) prophylactic in high risk patients, 2) problems with weaning from CPB or 3) low-output heart failure in the ICU. Levosimendan was given as a continuous infusion (0.2 µg/kg/min) for 16-24 hours, occasionally beyond 24 hours. Fifty-six patients (86%) had previous myocardial infarction, 16 (25%) within the last 4 weeks before surgery. Twenty-two patients (34%) had unstable angina. Six patients (9%) were operated for ongoing infarction and 3 patients (5%) had structural cardiac injury after infarction. Seven patients (11%) were operated for acute aortic dissection type A and 7 patients (11%) for endocarditis. Twenty-two patients (34%) had a history of heart failure. Twenty operations (31%) were emergency procedures. Surgery included CABG-, valve- and aortic surgery or surgery for postinfarct structural damage. Twenty-six patients (40%) had combined procedures. Thirteen operations (20%) were REDO procedures. Preoperative EF was 36+/-10%, LVEDP 20+/-10 mmHg. Thirty-four patients (52%) had pulmonary hypertension (SPAP>40 mmHg). Euroscore was 10+/-4, Parsonnet score 29+/-18. ECC time was 147+/-83 min, clamp time 86+/-56 min.

Results: In-hospital mortality was 25%. Patients died of progressive heart failure (10) bleeding (5) or stroke (1). Non-survivors had significantly higher risk than survivors (Euroscore 12+/-4 and Parsonnet score 41+/-23, p<0.02). Other complications included non-fatal stroke (1) and renal failure (15; 5 with hemofiltration). Forty-four patients (67%) had periods of atrial fibrillation. Twenty-two patients (34%) had IABP and 35 patients (54%) needed pharmacological circulatory support with two or more drugs in addition to levosimendan. Central venous oxygen saturation at ICU arrival was 68+/-12% and after 6 hours 73+/-9%. ICU stay was 3.8+/-3.0 days and time with respiratory support was 38+/-58 hours.

Conclusions: Levosimendan can be used safely, and in our experience, effectively in patients undergoing high risk cardiac surgery. The 25% in-hospital mortality in this material reflects severe preoperative morbidity and complex cardiac surgical procedures.