

Evaluation of Levosimendan in patients with high risk severe mitral valve disease undergoing mitral valve surgery

Thesis

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Abstract

Background: Levosimendan has anti-ischaemic effects, improves myocardial contractility and increases systemic, pulmonary and coronary vasodilatation. The present study investigates the perioperative hemodynamic effects of a prophylactic infusion of levosimendan in high-risk mitral valve surgery patients with left ventricle dysfunction, and compares short-term clinical outcomes with a control group in which levosimendan weren't used.

Patients and methods: A prospective randomized clinical study was performed in 100 patients with high risk mitral valve surgery with left ventricular dysfunction and pulmonary hypertension. In the study group, patients will receive Levosimendan infusion at a dose of 0.1 mcg/kg/min after the induction of anasethia while in control group levosimendan will not be used. Additional inotrope and/or vasoconstrictor may be used based on hemodynamic parameters. The intraoperative and postoperative data were recorded for each patient in both groups. The hemodynamic measurements were performed at six predetermined time points (0, 1, 6, 12, 24 and 36h postoperatively).

Results: Levosimendan had significantly improved postoperative hemodynamic values. It improved mean arterial pressure at different times postoperative ($p < 0.05$), heart rate at different times postoperative ($p < 0.05$). Also levosimendan preserve LV systolic performance postoperatively (PAP: 51.7 ± 6.4 , 57.9 ± 8.6 , $P < 0.001^*$) (EF: 37.1 ± 9.3 , 33.4 ± 7.1 , $P = 0.03^*$).

While there was no significant difference in ICU stay (3.24 ± 1.3 , 3.6 ± 1.13 , $P = 0.14$) and mortality between both groups (3 vs. 5, $P = 0.46$).

Conclusion: Prophylactic levosimendan improved the haemodynamics in high risk mitral valve surgery patients. So Levosimendan seems to be a safe and effective choice for preventing left ventricular failure in high-risk mitral valve surgical patients with LV dysfunction.

Key words: Levosimendan, mitral valve surgery, left ventricular dysfunction, pulmonary hypertension.