26432 - PREDICTION OF HEMODYNAMIC COMPLICATIONS FOLLOWING CARDIAC SURGERY

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INTRODUCTION: Hemodynamic and echocardiographic predictors of hemodynamic complications after cardiac surgery have been described but their relative importance in a large cohort is unknown.

METHODS: We conducted a retrospective analysis of 243 consecutive patients having undergone a cardiac surgical procedure in our center. Demographic, perioperative variables, “Swan-Ganz” derived hemodynamic profile and a standard sequence of cardiac images to evaluate systolic and diastolic function (using a multiplane transesophageal echocardiography (TEE)) were obtained after the induction of general anesthesia but before sternotomy. The primary endpoint consisted of a composite index of death, resuscitated cardiac arrest, the use of vasoactive support for more than 24 hours postoperatively, or the use of an intra-aortic balloon pump that was not present preoperatively.

RESULTS: 49 patients (20%) experienced hemodynamic complications, defined by the composite index. These patients had higher Parsonnet scores and body mass index, more complex surgeries and left ventricular dilatation, longer bypass and clamping time, more frequent difficult separation from bypass (DSB), lower mean arterial pressure/mean pulmonary arterial pressure ratio (MAP/MPAP), lower fractional area change and higher regional wall motion score index (RWMSI). In the univariate analysis, the only significant hemodynamic and echocardiographic variables were the MAP/MPAP ratio (3.38 ± 1.51 vs. 3.76 ± 1.17 ; OR: 0.75; CI: 0.56-1.00; $p=0.0524$) and the RWMSI (OR: 2.26; CI: 1.17-4.35; $p=0.0153$). A multiple stepwise logistic regression showed that the only 3 independent predictors of postoperative hemodynamic complications were the duration of cardiopulmonary bypass time (128 ± 57 vs. 90 ± 42 min; OR: 1.02; CI: 1.01-1.02; $p<0.0001$), aortic cross-clamp time (87 ± 44 vs. 60 ± 40 min; OR: 1.02; CI: 1.01-1.02; $p<0.0002$) and DSB (82% vs. 45%; OR: 5.47; CI: 2.52-11.9; $p<0.0001$).

DISCUSSION: No “Swan-Ganz” derived or echocardiographic variables were found to be independent predictors of complications after cardiac surgery. The duration of the procedure and DSB are the most important independent predictors of hemodynamic complications following cardiac surgery. Prevention of DSB could represent a potential strategy to reduce hemodynamic complications following cardiac surgery.