Prognostic criteria for reperfusion injury after coronary artery bypass grafting

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The most significant risk factor for perioperative mortality and complications during coronary bypass grafting (CABG) is myocardial reperfusion injury, associated with coronary blood flow restoration in ischemic area of heart muscle.

The prospective study included 125 patients with ischemic heart disease and an upcoming coronary artery bypass surgery. Among them, 75 (60%) patients underwent CABG with the assistance of cardiopulmonary bypass, 50 (40%) patients underwent CABG on the beating heart. Reperfusion injury was assessed by transesophageal echocardiogram (at baseline and intraoperatively). Morphofunctional signs of myocardial reperfusion injury were detected using MRI scanning, which was performed at baseline and on the 7th day after CABG. All examined patients were divided into 2 groups depending on the presence of ischemic reperfusion myocardial dysfunction. The 1st group included 34 patients who developed reperfusion injuries, the 2nd group consisted of 91 patients without reperfusion injuries. Two patients developed intraoperative myocardial infarction, which in one case required intra-aortic balloon pump installation. There was no hospital mortality. Initially, the groups were comparable in age and gender. On the basis of the logistic regression, the magnitude of the predictor contribution to the development of this adverse event was determined. The most significant of them were left ventricle relative wall thickness index, intraoperative index of regional contractility, myocardial necrosis of the LV myocardial mass, myocardial edema of the LV myocardial mass, ST2 levels, troponin levels.