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OP04-6

Evaluation of blood cardioplegic solution (Normacor) and Calafiore cardioplegia in heart surgery

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Introduction: Inadequate myocardial protection in cross-clamping period is an issue of concern in cardiac surgery. Cardioplegic solutions improve the tolerance to ischemia and reperfusion by preserving myocardial energy reserves, preventing osmotic and electrolyte imbalances and buffering acidosis.

Aim: To evaluate the efficacy and safety of the blood normotermal cardioplegic solution (Normacor) in comparison with the Calafiore cardioplegia during CABG.

Methods: A Single-center, prospective, randomized study includes 56 patients at the age 67 to 81 years, who have undergone on-pump GABG surgery. Patients were divided into two equal: the group N using the Normacor and group C - Calafiore cardioplegia. In the bouth groups, systemic temperature was 35°C. In group N of tepid blood induction cardioplegia, mixed at 2:1 (blood: induction cardioplegic solution) was given through the antegrade route. Total volume 1200 ml.Tepid blood maintenance cardioplegia, mixed at 4:1 (blood: maintenance cardioplegic solution), was repeated every 30 min. In group C induction and maintained of cardioplegia was done according to the Calafiore method. Heart rate, arterial blood pressure, central venous pressure and TEE monitoring was performing perioperatively.

We analyzed the total cardiopulmonary bypass time (CPB), aortic cross clamp time (ACC), frequency defibrillation requirement after removal aortic cross-clamping. Registered time electromechanical cardiac arrest took place and the heart resuscitation time

Frequency of inotropic therapy, rhythm and conduction disorders. Post-operative left ventricular ejection fraction and myocardial biochemical markers CPKMB, TnT.

Results: After GABG surgery, there were no hospital deaths and no statistically significant cardioplegia-specific changes in troponin T levels (median 0.34 ng $\cdot$ mL^{-1} for Normacor vs 0.39 ng $\cdot$ mL^{-1} for Calafiore. In group N postoperative left ventricular ejection fraction was $0,45 \pm 0,03$ and $0,43 \pm 0.04$ in group C. Frecuency of use of inotropic agents in the Normacor group (23%) and Calafiore (29%) groups was similar. Frequency postoperative atrial fibrilation for Normacor was 13%, for Calafiore was 15%.In the Calafiore group the electromechanical cardiac arrest took place significantly earlier ($23,3 \pm 3,7$ sec), in Normacor group - $39,4 \pm 4,0$ sec, $p < 0,05$). The heart resuscitation time has no significant difference in group N $101 \pm 13,0$ sec. vs $96 \pm 23,7$ sec in group C.

Conclusion: The Normacor solution is comparable with Calafiore cardoplegia for its cardioprotective properties and provides effective myocardial protection during CABG surgery.

REFERENCE: Buckberg versus Calafiore Cardioplegia in Patients with Acute Coronary Syndromes Elmar W. et al Thorac Cardiovasc Surg. 2017 Dec 31. http://dx.doi.org/10.1055/s-0037-1612604.

OP04-7

Cardiac protection with phosphocreatine in cardiac surgery

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Introduction: Phosphocreatine (PCr) plays an important role in the energy metabolism of the heart and a decrease in its intracellular concentration results in alteration of myocardium energetics and work. [1]

The aim of the study was a comparative evaluation of the use of exogenous phosphocreatine in myocardial protection against reperfusion injury in patients undergoing cardiac surgery with cardiopulmonary bypass.

Methods: The study included 42 patients undergoing cardiac surgery with aortic cross-clamping time more than 120 minutes. Patients were randomly assigned into two groups: 21 patients received 2 g of exogenous phosphocreatine iv 15 minutes before aortic unclamping followed by continuous infusion at a dose of 1g per hour during 3 hours after aortic unclamping (main group); 21 patients received placebo (control group). The need for temporary epicardial pacing after surgery, the length of inotropic support, mechanical ventilation time, the length of ICU stay were analyzed. The data were analysed at the following stages of the study: 1-at the end of the operation, 2-3 h after operation, 3-6 h after operation, 4-12 h after operation, 5-24 h after operation.

Results: The baseline and intraoperative characteristics of the patients were similar in both groups. The need for temporary epicardial pacing after surgery at the end of the operation was significantly lower in main group compared with control group, 47.4% (n=9) vs 73.7% (n=14) ($p < 0,05\%$). The length of inotropic support in early postoperative period was significantly lower in main group compared with control group (175 ± 37 vs 290 ± 89 minutes). The doses of dobutamine was $4,3 \pm 1,3$ mkg/kg/min in main group and $7,5 \pm 1,5$ mkg/kg/min ($p < 0,05\%$) in control group et the end of the operation. There was no significant difference in the inotropic support 3 h after operation.