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Preoperative carbohydrate load and intraoperative infused omega-3 polyunsaturated fatty acids positively impact nosocomial morbidity after CAGB: A double blind controlled randomized trial

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Background: A strategy of limited preoperative fasting, with carbohydrate (CHO) loading and intraoperative infusion of omega-3 polyunsaturated fatty acids (ω-3 PUFA), has seldom been tried in surgery. The aim of this study was to evaluate clinical variables (especially postoperative atrial fibrillation [POAF]), mortality and effects on the metabolism and inflammation after coronary artery bypass grafting (CABG)/cardiopulmonary bypass (CPB) in combination, if preoperative fasts are curtailed in favor of CHO loading, and ω-3 PUFA are infused intraoperatively.

Methods: Fifty-seven patients were randomly assigned to receive 12.5% maltodextrin (200 ml, 2h before anesthesia), (CHO, n=14); water (200 ml, 2h before anesthesia), (controls, n=14); 12.5% maltodextrin (200 ml, 2h before anesthesia) plus intraoperative ω-3 PUFA (0.2 g/kg) (CHO+W3, n=15); or water (200 ml, 2h before anesthesia) plus intraoperative ω-3 PUFA (0.2 g/kg) (W3, n=14). Insulin resistance and glucose control were analyzed.

Results: Two deaths occurred (3.5%), but there were no instances of bronchoaspiration and mediastinitis. Neither ICU stays nor total postoperative stay differed by group. Patients given preoperative CHO loads experienced fewer instances of hospital infection (RR=0.29, 95% CI: 0.09-0.94; P=0.023) and were less reliant on vasoactive amines during surgery (RR=0.60, 95% CI: 0.38-0.94; P=0.020), and while recovering in ICU (P=0.008). Groups given ω-3 PUFA experienced significantly fewer instances of POAF (RR=4.83, 95% CI: 1.56-15.02; P=0.001). Patients given preoperative CHO loads also got better glycemic control in ICU (P=0.015) and less need for exogenous insulin (P=0.018). Patients in the W3 group presented lower values of the ultrasensitive CRP with 36 h of PO (P=0.008). Interleukin-10 differed among groups and remained higher in the PO phase of patients who received ω-3 PUFA (P<0.05)

Conclusion: Preoperative curtailment of fasting was safe in this cohort. When implemented in conjunction with CHO loading and infusion of ω-3 PUFA during surgery, expedited recovery from CABG was observed.