CONTROL ID: 801884

TITLE: INSULIN EFFECT ON PLASMA AMINO ACID CONCENTRATIONS IN CARDIAC SURGERY

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ABSTRACT BODY: Introduction (Abstract Submission): High doses of insulin are required to prevent the hyperglycemic response to open heart surgery(1,2), a typical feature of the catabolic changes induced by major surgical tissue trauma(3). Although the effects of insulin on glucose homeostasis are well recognized its effect on perioperative protein metabolism has received little attention. The purpose of this study was to examine the effect of high-dose-insulin therapy on the plasma concentrations of amino acids (AA) in patients undergoing coronary artery bypass (CABG) surgery.

ABSTRACT BODY: Methods (Abstract Submission): With the approval of the local research ethics board, we approached non-diabetic patients scheduled for elective CABG requiring cardiopulmonary bypass. Consenting patients were randomly allocated to a control and treatment group. Patients in the control group perioperatively received a standard intravenous insulin protocol with the aim of keeping glycemia of 6-10mmol/L. In the treatment group insulin was continuously administered at 5mU/kg/min starting with skin incision. Simultaneously dextrose 20% was infused at a variable rate adjusted to maintain the blood glucose between 4 and 6mmol/L. Plasma AA were measured using high performance liquid chromatography prior to surgery and at the end of the operation. All patients received standard anesthesia and surgical care. Results are reported as mean ± standard deviation of the mean. Differences in mean values were assessed by Student’s t-test. All p-values presented are 2-tailed.

ABSTRACT BODY: Results (Abstract Submission): 20 patients were studied with 10 patients in each group. Baseline characteristics and surgical data were similar between the two groups. Plasma concentrations of all AAs intraoperatively decreased in the presence of high dose insulin therapy. Plasma concentrations of 14 out of 19 AAs including branched chain AAs (valine, leucine, isoleucine) were significantly lower than the control group.

ABSTRACT BODY: Discussion (Abstract Submission): High-dose-insulin therapy resulted in a significant reduction in plasma AA, particularly BCAA, during cardiac surgery. Future studies should determine if this hypoaminoacidemia is secondary to a suppression of endogenous protein breakdown, an increase in protein synthesis or a combination of both.


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