44045 - ANABOLIC EFFECTS OF PREOPERATIVE HYPOCALORIC NUTRITION

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INTRODUCTION: The avoidance of preoperative fasting, i.e. the intravenous administration of nutrition has been shown to prevent postoperative insulin resistance,¹ a typical feature of the endocrine response to surgery. Although the importance of insulin function for the normalization of impaired glucose homeostasis is well established, its modifying effect on postoperative protein catabolism has not been studied yet. The goal of the present protocol was to test the hypothesis that preoperative hypocaloric nutrition exerts a protein-sparing effect after abdominal surgery.

METHODS: After approval by the local Ethics Committee and after obtaining written informed consent, 22 patients undergoing colorectal surgery were admitted to the study. All patients received general anesthesia combined with epidural anesthesia followed by epidural analgesia after the operation. Patients were randomly assigned to receive intravenous glucose with amino acids either from 12:00 on the day before surgery (FED) or from surgical skin incision (FAST) until the second postoperative day. Glucose provided 50% of the patients' resting energy expenditure (REE). Amino acids were infused at rates providing 20% of the REE. The patients' catabolic state was assessed by measuring whole body protein balance using primed continuous infusions of L-[1-13C]leucine before and two days after surgery, with positive values indicating anabolism. Insulin serum concentrations were also determined. Statistical analysis was performed using ANOVA for repeated measures.

RESULTS: Protein balance increased from -16.4 ± 4.7 $\mu\text{mol/kg/h}$ to -10.0 ± 4.4 $\mu\text{mol/kg/h}$ in the FAST group and from -16.5 ± 7.1 $\mu\text{mol/kg/h}$ to $+1.2 \pm 3.3$ $\mu\text{mol/kg/h}$ in the FED group. The postoperative increase in protein balance was more pronounced in the FED than in the FAST group ($p=0.0005$). Insulin serum concentrations increased from 38 ± 29 pmol/l to 176 ± 101 pmol/l in the FAST group and from 55 ± 36 pmol/l to 146 ± 64 pmol/l in the FED group with no significant difference between the groups.

DISCUSSION: Perioperative administration of hypocaloric nutrition initiated 24 hours before surgery induces an anabolic state as reflected by positive protein balance two days after colorectal surgery. Patients entering surgery in the fasting state and receiving hypocaloric nutrition started with surgical skin incision remain catabolic.

REFERENCES:

1. J Am Coll Surg 1994 178: 329-336