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Postprandial ghrelin suppression is exaggerated following major surgery; implications for nutritional recovery

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Abstract

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Meeting patients' nutritional requirements and preventing malnutrition is a challenge following major surgical procedures. The role of ghrelin in nutritional recovery after non-gastrointestinal major surgery is unknown. We used coronary artery bypass grafting (CABG) as an example of anticipated good recovery post major surgery. Seventeen patients undergoing CABG (mean \pm SEM: 70.1 \pm 2.2 yrs, BMI 29.1 \pm 1.4 kg/m², 15 male) underwent fasting and postprandial (45 mins after standard test breakfast) blood sampling pre-operatively (day 0), post-operatively (day 6) and at follow-up (day 40). Changes in food intake, biochemical and anthropometric markers of nutritional status were recorded. A comparison was made to 17 matched healthy controls (70.6 \pm 2.3 yrs, BMI 28.4 \pm 1.3 kg/m²). We observed significantly increased post-operative and follow-up fasting ghrelin concentrations compared with pre-operatively (pre-op. 402 \pm 42 pmol/L vs post-op. 642 \pm 97 pmol/L vs follow-up 603 \pm 94 pmol/L) (ANOVA p < 0.05). Significantly exaggerated postprandial suppression of ghrelin was seen postoperatively and continued until follow-up (pre-op. 10 \pm 51 pmol/L vs post-op. -152 \pm 43 pmol/L vs follow-up -159 \pm 65 pmol/L, p < 0.05). This was associated with a 50% reduction in food intake (post-op. 4.5 \pm 0.5 MJ/D (1076 \pm 120 kcal/D) compared with estimated requirements 9.9 \pm 0.5 MJ/D (2366 \pm 120 kcal/D)), leading to a 4% weight loss and a 5% reduction in muscle arm circumference loss over length of follow up. Our data support the hypothesis that prolonged changes in fasting and postprandial plasma ghrelin concentrations are associated with impaired nutritional recovery after CABG. These findings reinforce the need to investigate ghrelin in other patients groups undergoing major surgery. © 2007 Nematy et al; licensee BioMed Central Ltd.

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EMTREE drug terms: biological marker; ghrelin

EMTREE medical terms: aged; anthropometry; arm circumference; article; blood sampling; clinical article; coronary artery bypass graft; female; follow up; food intake; human; major surgery; male; nutritional status; postprandial state; preoperative period; weight reduction

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