

Giving the right nutrients before surgery cuts postoperative infections and lowers hospital costs

Basel, June 3, 2003 – Preoperative administration of an oral supplement containing immune-enhancing nutrients gives a boost to patients' immune system that helps them to fight off postoperative infections so they spend less time in hospital.

New data presented at the recent 16th annual meeting of the Surgical Infection Society Europe (29th-31st May 2003) in Cernobbio, Italy, Dr Luca Gianotti from the Department of Surgery at the University of Milano-Bicocca, Monza, Italy, showed that major operations for cancer of the gastrointestinal tract are still associated with a high risk of complications and a high consumption of health care resources.

Surgical trauma increases levels of proinflammatory cytokines and lowers host defense mechanisms. But administration of ORAL IMPACT[®] an enteral immune-enhancing drink, (supplemented with arginine, n-3 polyunsaturated fatty acids and ribonucleotides) is able to modulate the immune and inflammatory responses altered by surgical trauma, upregulating gut microperfusion and oxygen metabolism. [1]

Randomized trials have shown that preoperatively loading elective surgery patients with immune-enhancing substrates in an oral formula for 5 days and continuing therapy by jejunal infusion for 7 days after surgery results in significant reductions in postoperative infections and length of hospital stay in patients undergoing gastrointestinal surgery for cancer,[2] with a subsequent significant reduction of health care costs.[3]

Post-hoc analysis of these data suggested that even patients who were unable to comply with postoperative immunonutrition benefited from a reduction in complications. So to determine whether preoperative treatment was as effective as perioperative treatment in reducing postoperative complications, Dr Gianotti conducted two trials in patients with gastrointestinal cancer comparing both approaches with control group who received no additional immune-enhancing supplementation to normal diet. One trial enrolled malnourished patients (n=150) [4] the other enrolled well-nourished patients (n=305). [5]

The published results showed that in malnourished patients (those who had lost more than 10% of body weight in the previous 6 months) patients in the control group had significantly more postoperative complications than those treated preoperatively, while those treated before and after surgery even fewer. This was reflected in patients' total length of hospital stay, which was significantly shorter in the preoperative (13.2 days) and perioperative (12.0 days) groups than in the control group (15.3 days).

But in well-nourished patients, oral preoperative supplementation showed similar results to perioperative immune-enhancing supplementation, and both were superior to the control approach:

- Incidence of postoperative infections was 14% in the preoperative group and 16% in the perioperative group, but over 30% in the control group (P=0.006 vs. preoperative; P=0.02 vs. perioperative).

- Length of hospital stay was 11.6 days in the preoperative group, 12.2 days in the perioperative group, and 14.0 days in the control group (P=0.008 vs. preoperative and P=0.03 vs. perioperative).

Dr Gianotti explained: “Preoperative feeding 5 days prior to surgery modulates the host immune defense mechanisms sufficiently to avoid surgical depression of the immune system, and thus to fight off postoperative infections.”

“Whether patients are malnourished or well-nourished, preoperative supplementation with an immune-enhancing formula will ensure that patients are fit for surgery,” he said. “But in well-nourished patients we can avoid possible side-effects of enteral feeding, such as nasojejun tube clogging or removal, abdominal cramps and save the costs of providing postoperative immunonutrition.”

But the real cost savings from this preoperative immune-enhancing supplementation strategy emerged when he added up the costs of managing postoperative complications (obtained from the Italian Ministry of Health) in this trial.

Unsurprisingly, for patients with no complications the cost was lowest in the control group, but for patients with complications the cost per patient was lowest in the preoperative treatment group.

Adding together the costs of nutrition plus the costs of managing both complicated and uncomplicated patients), Dr Gianotti found the total costs as:

- 723,368 Euro for control group
- 681,496 Euro for perioperative treatment
- 578,085 Euro for preoperative treatment.

By relating these costs to Diagnosis-Related-Group (DRG) reimbursement rates for the same patients, Dr Gianotti found that costs in the control group accounted for 93% reimbursement of DRG reimbursement while they accounted for just 78% in the preoperative and 86% in the perioperative group, suggesting that hospitals could save money by adopting preoperative immunonutrition.

“The major cost of surgical complications, particularly infectious complications, is the cost of prolonged hospital stays,” said Dr Gianotti. “The benefit of immunonutrition is mainly in reducing the rate of infectious complications. The cost of providing preoperative immune-enhancing diet was more than offset by the reduced length of stay from this approach.”

He urged surgeons to adopt a strategy of “supporting malnourished patients with a perioperative immune-enhancing supplementation to normal diet and to support well nourished patients with the preoperative approach without postoperative prolongation.”

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