

Preoperative Oral Arginine and n-3 Fatty Acid Supplementation Improves the Immunometabolic Host Response and Outcome after Colorectal Resection for Cancer

Braga M, Gianotti L, Vignali A, Di Carlo V.
Surgery 2002; 132:805-814

Objective

To evaluate the impact of preoperative oral administration of a diet supplemented with arginine, omega-3 fatty acids and nucleotides on immune response, gut oxygenation, and postoperative infections in patients undergoing colorectal resection for cancer.

Methods

- a) Mostly weight-stable patients (180/200) with colorectal cancer scheduled for elective curative surgery were prospectively randomized to one of 4 groups (n=50 for each group):
 - a) Pre-op group: 1L/day ORAL IMPACT[®]* drink for 5 days before surgery
 - b) Peri-op group: 1L/day ORAL IMPACT drink for 5 days before surgery with post-op jejunal infusion of Oral IMPACT drink (target 1.5L/day)
 - c) Control group: 1L/day isonitrogenous, isocaloric formula orally for 5 days before surgery
 - d) Conventional group: no nutrition supplementation before or after surgery
 - e) All patients were allowed regular food the 5 days prior to surgery
 - f) All patients were followed for occurrence of complications for 30 days following hospital discharge
 - g) All patients were analyzed on an intention-to-treat basis.

Results

- The groups receiving ORAL IMPACT drink (pre-op and peri-op) had a significantly lower infection rate compared to control and conventional groups ($P < .04$ for pre-op and $P < .02$ for peri-op).
 - Intent-to-treat analysis showed an overall infection rate of 12% pre-op group, 10% peri-op group, 32% control group and 30% in the conventional group.
 - The group receiving ORAL IMPACT drink preoperatively had a 62% lower rate of infections, compared to the control group and a 60% lower rate of infections, compared to the conventional group.
 - The group receiving ORAL IMPACT perioperatively had a 69% lower rate of infections, compared to the control group and a 67% lower rate of infection, compared to the conventional group. Differences between preoperative and perioperative groups were not statistically significant.
- Length of antibiotic therapy was significantly shorter in the patients receiving ORAL IMPACT drink who developed postoperative infections ($P < .004$ for pre-op group and $P < .005$ for peri-op group vs. control and conventional).
- The two groups receiving ORAL IMPACT drink (pre-op and peri-op) had significantly better gut oxygenation ($P < .01$) and microperfusion ($P < .02$) than the other two groups.
 - The authors noted that good perfusion and oxygenation is a critical event for the healing of the intestinal anastomosis performed during colorectal surgery.
- Hospital length of stay was shorter by 2.5 days on average for patients receiving ORAL IMPACT drink ($P < .0005$ for pre-op group and $P < .0001$ for peri-op group) vs. control and conventional).

Conclusion

Preoperative oral supplementation of arginine, omega-3 fatty acids and nucleotides (ORAL IMPACT Drink) improved the immunometabolic response and decreased the infection rate in colorectal cancer surgical patients. Postoperative prolongation with such supplemented formula was not found to be of significant additional benefit.

Summary prepared by Nestlé Health Science. To order a copy of the study, please link to the pub med site below to access the publisher's website:

<http://www.ncbi.nlm.nih.gov/pubmed/12464864>

* IMPACT ADVANCED RECOVERY[®] Advanced Nutrition Drink is the oral form of IMPACT Formula offered in the United States.

IMPACT[®] and IMPACT ADVANCED RECOVERY[®] are registered trademarks of Société des Produits Nestlé S.A., Vevey, Switzerland.

May 2012