

TOP Journal Club

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Application of perioperative immunonutrition for gastrointestinal surgery: a meta-analysis of randomized controlled trials.

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The aim of this study was to evaluate clinical and economic validity of perioperative immunonutrition and effect on postoperative immunity in patients with gastrointestinal cancers. Immunonutrition diet supplemented two or more of nutrients including glutamine, arginine, omega-3 polyunsaturated fatty acids and ribonucleic acids. A meta-analysis of all relevant clinical randomized controlled trials (RCTs) was performed. The trials compared perioperative immunonutrition diet with standard diet. We extracted RCTs from electronic databases: Cochrane Library, MEDLINE, EMBASE, SCI and assessed methodological quality of them according handbook for Cochrane reviewer in June 2006. Statistical analysis was performed by RevMan4.2 software. Thirteen RCTs involving 1269 patients were included. The combined results showed that immunonutrition had no significant effect on postoperative mortality (OR =0.91, p= 0.84). But it had positive effect on postoperative infection rate (OR =0.41, p<0.00001), length of hospital stay (WMD=-3.48, p<0.00001). Furthermore, it improved immune function by increasing total lymphocytes (WMD=0.40, p<0.00001), CD4 levels (WMD=11.39, p<0.00001), IgG levels (WMD=1.07, p=0.0005) and decreasing IL6 levels (WMD=-201.83, p<0.00001). At the same time, we did not found significant difference in CD8, IL2 and CRP levels. There were no serious side effects and two trials found low hospital cost. In conclusion, perioperative diet adding immunonutrition is effective and safe to decrease postoperative infection and reduce length of hospital stay through improving immunity of postoperative patients as compared with the control group. Further prospective study is required in children or critical patients with gastrointestinal surgery.

Prospective randomized study on perioperative enteral immunonutrition in laparoscopic colorectal surgery.

Surg Endosc. 2007 Mar 14

BACKGROUND: Perioperative nutrition for patients undergoing colon surgery seems to be effective in reducing catabolism and improving immunologic parameters. A relatively low-fiber and highly absorbable diet may facilitate the intestinal cleansing and loop relaxation fundamental for laparoscopic surgery with a lower dose of iso-osmotic laxative. **METHODS:** From 1 February 2004 to 30 July 2005, 28 patients referred to our unit with colon disease (neoplasms and diverticular disease) amenable to laparoscopic surgery were prospectively randomized into two groups of 14 patients each. For 6 days preoperatively, the patients in group 1 were given 750 ml/day of a diet enriched with arginine, omega-3 fatty acids, and ribonucleic acid (RNA) associated with low-fiber foods. They had 1 day of intestinal preparation with 3 l of iso-osmotic laxative. On postoperative day 2, they were fed orally with the same diet. The patients in group 2 preoperatively received a low-fiber diet. They had 2 days of preparation with iso-osmotic laxative (3 l/day). On postoperative day 3, oral nutrition was restored. Intraoperatively, we evaluated loop relaxation and intestinal cleanliness. Clinical trends were monitored in both groups, as well as adverse reactions to early nutrition. The nutritional (albumin, prealbumin) and immunologic (lymphocyte subpopulations, immunoglobulins) biohumoral parameters were evaluated at the first visit, on the day before surgery, on postoperative day 7, and 1 month after surgery. **RESULTS:** The two groups did not differ in terms of age, gender, distribution of disease, or baseline anthropometric, biohumoral, or immunologic parameters. There was a significant increase in CD4 lymphocytes on the day before surgery as compared with baseline parameters (p < 0.05) in group 1, but not in group 2. There was no statistically significant difference between the two groups in intestinal loop relaxation or cleanliness or in postoperative infectious complications. **CONCLUSIONS:** Perioperative immunonutrition proved to be safe and useful in increasing the perioperative immunologic cell response. It may contribute

toward improving the preparation and relaxation of the intestinal loops despite the shorter intestinal preparation.

Brain activation in uremic anorexia.

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This article reviews current knowledge about mechanisms responsible for uremic events, especially those that involve the central nervous system (CNS). Anorexia is a frequent complication of the uremic syndrome that contributes to malnutrition in patients on dialysis. Uremic anorexia has been associated with many factors. Traditionally, anorexia in dialysis patients has been regarded as a sign of uremic toxicity; therefore, 2 hypotheses have been proposed: the "middle molecule" and "peak concentration" hypotheses; both of these remain unproved. Recently, our group has proposed the tryptophan-serotonin hypothesis, which is based on a disorder in the amino acid profile that may be acquired when the patient is in uremic status. It is characterized by low concentrations of large neutral and branched chain amino acids in the cerebrospinal fluid. This situation permits a high level of tryptophan transport across the blood-brain barrier and enhances the synthesis of serotonin (the final target responsible for inhibiting appetite). The role of inflammation in the genesis of anorexia-malnutrition is also emphasized. In summary, in the CNS, factors associated with uremic anorexia include high levels within the cerebrospinal fluid of proinflammatory cytokines, leptin, and free tryptophan and serotonin (hyperserotonergic-like syndrome), along with deficiency of neural nitric oxide (nNO) and disorders in various receptors such as melanocortin receptor-4 (MC4-R). Uremic anorexia is a complex complication associated with malnutrition and high levels of morbidity and mortality. Several uremia-acquired disorders in the CNS such as high cerebrospinal fluid levels of anorexigen substances and disorders in appetite regulator receptors may explain the lack of appetite.

Fatty acid intake and the risk of community-acquired pneumonia in U.S. women.

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OBJECTIVE: Despite substantial progress in the treatment of community-acquired pneumonia, there are limited data on dietary risk factors. Fatty acid intake may influence community-acquired pneumonia risk by modulating the immune system. Our study prospectively examined the association between fatty acid intake and community-acquired pneumonia risk. **METHODS:** The study population included 83165 women from the Nurses' Health Study II cohort who were 27 to 44 y old in 1991. The women reported lifestyle habits on biennial questionnaires and dietary intake every 4 y by validated semiquantitative food frequency questionnaires. There were 925 pneumonia cases over 10 y of follow-up. We examined independent associations for six fatty acids using Cox's proportional hazards regression. **RESULTS:** Women in the highest quintile of palmitic acid intake had a 54% greater risk of pneumonia compared with those in the lowest quintile (multivariate relative risk 1.54, 95% confidence interval 1.12-2.12, P for trend = 0.002). Oleic acid intake was inversely associated with pneumonia risk (highest quintile multivariate relative risk 0.75, 95% confidence interval 0.55-1.04, P for trend = 0.02). Women in the highest quintile of docosahexanoic acid and eicosapentaenoic acid intake had a 24% greater risk of community-acquired pneumonia than did those in the lowest quintile (multivariate relative risk 1.24, 95% confidence interval 1.00-1.55, P for trend = 0.08). No significant associations were found for linoleic acid, alpha-linolenic acid, or docosahexanoic acid alone. **CONCLUSION:** Fatty acid intake may affect the risk of community-acquired pneumonia in young and middle-aged women. Higher dietary intake of palmitic acid and possibly docosahexanoic and eicosapentaenoic acids may increase the risk of community-acquired pneumonia in women, whereas higher oleic acid intake may decrease the risk.

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