O.47 Metabolic and immune effects of postoperative feeding in the surgical patient

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Arginine (ARG), Omega-3 fatty acids and RNA have been shown experimentally to enhance immune function, but their combined effects in patients are unknown. This randomized, prospective trial evaluated immune and metabolic effects of a postoperative enteral diet supplemented with ARG (18.5 g/L), Omega-3 FA (1.5 g/L) and RNA (1.25 g/L) (n = 13) compared with an isocaloric control diet (n = 16) in 29 patients undergoing surgery for UGI cancer. Peripheral blood mononuclear cells were measured preop and on postop days 1 and 7 for response to Con A and PHA and dual marker phenotype analysis of lymphocyte and macrophage subsets were done. Mean age, degree of preoperative weight loss, length of operation, number of perioperative transfusions and disease type were similar between groups. Mean cumulative nitrogen balance was significantly better ($p < 0.05$) in the supplemented group (−15.7 g) compared with the control group (−43.8 g) and positive mean nitrogen balance was achieved only in the supplemented group. At postop day 7 mean plasma ARG levels increased to 91 ± 28 uM/L in the supplemented group compared with 42 ± 26 uM/L in the control group.

		Mitogen Stimulation Index		
	Dietary group	Preop	Postop 1	Postop 7
PHA	Control	138±27	86±20	83±15
	Supplemented	177±34	90±24	188±34**†

*Mean ± SEM: ANOVA ** $p = 0.003$ (control vs supplemented), † $p < 0.05$ postop day 1 vs postop day 7*

T cell proliferation in response to Con A and PHA mitogens was significantly depressed postop, but return to preop levels by day 7 only in the supplemented group. G-I complications secondary to feeding (diarrhea, cramping) occurred in 20–23% of patients in both groups. The non-gastrointestinal complication rate was 23% in the control group compared with 19% in the supplemented group. Thus, specific nutrient substrates given postoperatively significantly improve immune function and reduce postoperative protein catabolism. Short-term morbidity and long-term prognosis may be improved since immune suppression secondary to operation and blood transfusions was reversed.

O.48 Pathogenesis and therapy of HIV-1-associated malnutrition: preliminary results of a prospective intervention study

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Introduction: HIV-1-infected patients have a high risk to become malnourished during the course of their illness. In order to plan adequate nutritional intervention regimens for immunocompromised pat., we analyzed prospectively nutrition behaviour and efficacy of dietetic intervention in malnourished HIV-1-infected out-patients.

Methods: 52 consecut. treated HIV-1-infected men (age: 24–61 y, median 40, disease stage WR.5,6) with apparent malnutr. (BMI < 24, and/or unintent. weight loss > 10% orig. b.w. during 6mths.) were analyzed retrosp., and followed prospect. for a period of 6 weeks. Nutritional behaviour before intervention was estimated with a standard. diet history. During one week before the intervent. period, nutr. intake was calculated from dietary records. Each pat. got a basic nutrit. education, and recommendations for daily intake of energy (35 kcal/kg ideal b.w.), protein (1.2–1.5 g/kg id. b.w.), essent. nutr. The efficacy of the intervention was analyzed by the courses of body weight, bioelectrical impedance analysis, amount of nutrient intake, standard. test on nutr. knowledge.

Results: 27/52 overestimated oral intake, based on the comparison of diet history and record. Calcul. mean energy intake: 1280–2240 kcal/d, <75% RDA for 36/52. 26/52 suffered from long-standing diarrheas (>5 stools p.d. for >1 month), 30/52 were febrile (body temp. > 38°C), 2–3 d a week or continuously for less than 2 weeks. 49/52 pat. tolerated weekly dietetic motivation. In 45/49 stabilized nutrit. status with stop of weight loss after 1 week; weight gain in 16/49 until week 6: 2–10 kg, median 3 kg. In 3/52 nutrition education was not possible because of HIV-induced CNS-complications.

Conclusions: Predominant pathogenetic factors of HIV-1-associated malnutrition are inadequate spontaneous oral nutrient intake, febrile periods, and long-standing diarrhea as a consequence of gastrointestinal opportunistic infections. In most HIV-1-infected out-patients of disease stage WR 5,6, malnutrition can be treated or prevented by dietetic means. Hospitalization for intensified oral or artificial nutrition therapy is indicated in cases of dementia, untreatable diarrhea or long-standing sepsis.

O.49 Role of dietary nucleotide sources in prevention of immune function loss accompanying protein starvation

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Previous investigations have demonstrated that dietary sources of nucleotides are required to reverse immunosuppression induced by protein starvation as well as for maintenance for normal cellular immune response. To test whether dietary nucleotides can prevent immune suppression during protein starvation, Balb/c mice (5/group) were randomized to five dietary groups: a protein free diet in which the casein protein normally present in a basal formula was replaced by sucrose (PF); the protein free diet supplemented with either 0.25 or 0.50% yeast RNA (PFR1 and PFR2 respectively); or with 0.06% uracil (PFU) or with 0.06% adenine (PFA); or normal rodent chow which also contains sources of nucleotides.

At the time of dietary randomization mice were inoculated in the hind foot pad with 10^7 irradiated C57BL/6 allogeneic splenocytes. A similar dose of irradiated syngeneic splenocytes were injected as a control in the contralateral footpad. Mice were weighed daily. At the end of seven days the mice were sacrificed and the popliteal lymph nodes (PLN) draining the hind footpads were excised and weighed. The stimulation index (SI) representing the ratio of the allogeneic lymph node to the syngeneic node was determined to quantify the lymphocyte proliferative response. The chow fed controls maintained their weight. All groups fed the PF or PF-supplemented diets lost approximately 30% of their body weight. Despite this weight loss the PFR fed animals maintained normal lymphocyte proliferative responses (PFR1, SI = 3.85 ± 0.42 and PFR2, SI = 4.2 ± 0.78) compared to the nonstarved chow fed mice (SI = 4.24 ± 0.46) and significantly more lymphoproliferative response than PF mice (SI = 2.23 ± 0.30: $p < 0.05$). The response of the animals on the PFU (SI = 2.55 ± 0.31) and PFA (SI = 3.09 ± 0.44) diets were not significantly greater than the PF group.

This is the first demonstration that an alloimmune response can be maintained by dietary nucleotides in the face of protein deprivation. Sources of either purines or pyrimidines at the indicated doses were not sufficient to prevent the loss of immune function suggesting a requirement for both types of nucleotides. These findings have broad implications in many nutritional settings.

O.50 Intravenous nucleosides and nucleotide mixture restores impaired lymphocyte proliferation induced by nutritional nucleic acid deprivation

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In surgically stressed rats, we have examined effects of nucleosides and nucleotide mixture (OG) given with TPN on protein metabolism. In this study, mitogen responsiveness of lymphocytes from male Wistar rats maintained