98

Abstract 130

USE OF AMINO ACID (AA) SUPPLEMENTATION IN A NEPHRECTOMIZED PATIENT (PT) ON DIALYSIS. *Rothkopf MM*, Bartel L, Haverstick LP, DeFranco P. Florham Park, NJ USA.

Protein calorie malnutrition (PCM) in end stage renal disease (ESRD) may result in abnormal AA profiles with low levels of valine, leucine, isoleucine, tyrosine, lysine and tryptophan. Glycine levels may be elevated. The ratios of essential AA (EAA) to nonessential AA (NEAA) tyrosine:phenylalanine (Tyr:Phe), and valine: glycine (Val:Gly) may also be reduced. We recently evaluated a 50-year old anephric male with progressive PCM who demonstrated these abnormalities. He had not responded to either a high protein diet or total parenteral nutrition. The patient was placed on an oral AA supplement providing 60 g of protein daily. The formula was selected to restore levels of the deficient AAs.

Results	Before AA supplementation	After AA supplementation
Albumin/T. pro	2.2/4.4	3.6/6.7
Cholesterol	99	193
Weight (kg)	42	48
EAA/NEAA	388/1056	538/1950
Tyr:Phe	.239	.571
Val:Gly	.388	.467

The patient's nutritional status improved significantly following AA supplementation, seemingly out of proportion to the quantity of protein and calories provided. This may be due to correction of malabsorption or stimulation of underutilized metabolic pathways. Correction of AA abnormalities may be beneficial in selected patients.

Abstract 131

THE EFFECT OF TPN-ASSOCIATED CHANGES IN INTESTINAL INTRAEPITHELIAL LYMPHOCYTES (IEL) ON EPITHELIAL BARRIER FUNCTION. Forbush B, Kiristioglu I, *Teitelbaum DH*, Bishop DK, Zhou H, Coran AG. Intro by AG Coran. University of Michigan, Ann Arbor, MI USA.

TPN is associated with a loss of epithelial barrier function. The etiology of this barrier loss is not clear, however, cultured epithelial cells lose tight junction integrity with interferon gamma (INF-γ), an action which can be blocked with transforming growth factor beta (TGF-β1. It is not clear if these mechanisms exist in vivo. Because the IEL produces these cytokines, we hypothesized that TPN-associated changes in IEL cytokine expression may mediate the loss of epithelial barrier function.

Mice underwent intravenous catheterization and received either a balanced, isonitrogenous, isocaloric TPN solution with no oral intake, or intravenous saline and ad lib water and mouse chow. Mice were sacrificed at 7 days, and the IEL was isolated. IEL mRNA was reverse transcribed, and expression of INF-γ and TGF-β1 were studied using competitive polymerase chain reaction (PCR) techniques. Results are expressed as the mean$\pm$SD (N=7 per group). Epithelial barrier function was assessed with luminal perfusion of [^{14}C]-EDTA. Statistical analysis used paired t tests. PCR results:

Cytokine	TPN$\pm$SD (attomoles/μl)	Control$\pm$SD (attomoles/μl)	p value
TGF-β1	0.60$\pm$0.35	0.56$\pm$0.18	0.35
INF-γ	0.14$\pm$0.07	0.44$\pm$0.11	0.03

Isolation of the lymphoid cells from epithelial cells was done with anti-CD45 (lymphoid marker) and biomagnetic extraction. Cytokine expression in CD45+ cells rose from 71% in the Control group to 90% in the TPN group. Simultaneous with the rise in cytokine expression, [^{14}C]-EDTA was detected at markedly higher levels in the urine of mice on TPN (4,300$\pm$2,000 CPM) compared to controls (200$\pm$50 CPM). To assess the relevance of INF-γ changes, permeability in INF-γ knock out (KO) mice (n=2) were studied: Mean urine [^{14}C]-EDTA: INF-γ KO: 1,600 CPM vs. Control: 5,500 CPM.

In conclusion, TPN resulted in an increased IEL INF-γ and stable TGF-β1 mRNA expression. This appeared to be associated with a loss of epithelial barrier function. This was partially corrected in INF-γ KO mice, suggesting this is one mechanism responsible for the loss of the epithelial barrier.

Abstract 132

HOMOCYSTEINE LOWERING IN MEN AND WOMEN WITH NORMAL PLASMA HOMOCYSTEINE LEVELS. Spiller G, *Bruce B*, Jensen C. Health Research and Studies Center, Los Altos, CA USA; Shaklee Technica, San Francisco, CA USA.

Hyperhomocysteinemia is recognized as an atherogenic risk factor. This double blind, randomized, placebo-controlled trial evaluated the homocysteine lowering of a nutritional supplement with 400 mcg folic acid, 300 mcg B_{12}, and 4 mg B_6 in 30 well nourished, older men and women (mean 69$\pm$7 years old) with a mean baseline plasma homocysteine concentration of 8.3$\pm$1.7 mmol/l and normal plasma folic acid, B12, and B6 levels. Subjects were not taking B vitamin supplements prior to the study and were asked to maintain habitual diet and activity. At 8 weeks, there was a highly significant ($p<0.001$) 12% reduction in the supplemented group, while it increased <1% in the placebo group. Mean plasma folic acid and B_{12} increased significantly ($p<0.001$) in supplemented subjects, while red cell B_6 did not change significantly. There were no significant changes in plasma folic acid, B_{12}, or B_6 in the placebo group. Dietary composition did not change significantly in either group, except for protein which decreased significantly ($p<0.001$) in the supplemented group. This study showed that B vitamin supplementation can lower homocysteine concentrations in persons with normal levels. Further research on the implications of this effect in older, well nourished adults is needed.