

023 Parenteral nutrition supplemented with alanyl-glutamine dipeptide decreases infectious morbidity and improves organ function in critically ill post-operative patients: results of a double-blind, randomized, controlled pilot study. T. R. Ziegler, MD; C. Fernandez-Estivariz, MD; D. P. Griffith, RpH; E. E. Szeszycki, PharmD; N. Bazargan, MD; M. Luo, MD; N. M. Daignault, RD; N. Dave, PharmD; G. F. Bergman; T. McNally, RN; C. H. Battey, RN; C. E. Furr, RpH; L. H. Gu, MD; C. R. Jonas, PhD; G. A. Cotsonis, MS; D. P. Jones, PhD; J. R. Galloway, MD; Emory University School of Medicine, Atlanta, GA.

Background: Glutamine (GLN)-supplemented parenteral nutrition (PN) improved clinical outcomes in studies of ICU patients. However, little information is available comparing efficacy of GLN-enriched PN in specific patient subgroups. This double-blind, randomized, controlled study aimed to 1) determine whether PN supplemented with alanyl-GLN dipeptide (AG) improves outcomes in critically ill adult patients following major pancreatic, cardiovascular or colonic operations; and 2) compare responses between two a priori-specified subgroups; patients undergoing pancreatic versus non-pancreatic surgery.

Methods: Adults (N=63) requiring post-operative ICU care and deemed to require PN for at least 7 days after entry were studied. Subjects had no malignancy, acute or uncontrolled infection, or significant hepatic or renal dysfunction. Subjects were block-randomized to receive isonitrogenous (1.5 g aminoacid/kg/d), isocaloric (1.3 X REE) PN providing standard GLN-free aminoacids or the aminoacid formula supplemented with AG (0.5 g/kg/d); PN lipid and micronutrient composition was identical. With intestinal recovery, subjects received oral diet or a standard tube feeding and PN was weaned as indicated. After initiating study PN, intestinal D-xylose absorption (day 7), maximal total bilirubin concentrations (during study PN), and serial blood glucose levels (entire hospitalization) were determined. The primary endpoint was number of new infections (CDC criteria) during hospitalization after study PN initiation. Secondary endpoints included bacteremias, development of multiple new infections, days on ventilator, ICU and hospital length of stay (LOS) and hospital mortality.

Results: A total of 31 control and 32 AG patients were randomized, with 29 control and 30 AG patients meeting analysis criteria (5 or more days of study PN). Baseline characteristics between the two groups were similar (e.g. age, gender, BMI, hospital day at entry, type of operation, blood glucose and C-reactive protein levels; all NS). Time on study PN, intravenous and enteral nutrient intake and blood glucose values were also similar between groups. The AG group demonstrated significantly decreased total bilirubin levels and improved 2-hr blood D-xylose concentrations vs controls (not shown) and trends toward decreased infectious morbidity and mortality (NS; Table 1). However, there were striking differences in the response to AG-PN in the pancreatic versus non-pancreatic surgery subgroups, in that pancreatic surgery patients did not appear to benefit (Table 1). In non-pancreatic surgery control (n=12) and AG (N=15) patients, the baseline clinical, operative, ventilator-related and metabolic parameters and study PN intake (12±1 days) were similar (not shown). However, compared to subgroup controls, non-pancreatic surgery patients given AG-PN demonstrated a significant decrease in ventilator days (control-PN 21±5 vs AG-PN 9±2 days, P=0.02) and maximal total bilirubin levels (control-PN 3.9±0.7 vs AG-PN 1.6±0.2 mg/dl; P=0.01) and improved 2-hr D-xylose absorption (control-PN 6±2 vs AG-PN 23±3 mg/dl; P=0.001); AG-PN also tended to decrease ICU LOS (control 23±6 vs AG-PN 12±2 days; P=0.061).

Conclusions: Compared to responses with standard PN, AG-supplemented PN does not improve clinical outcomes after pancreatic surgery. AG-PN decreases hospital infectious morbidity and improves organ function in non-pancreatic surgery patients requiring ICU care.

Table 1. AG-PN improves clinical outcomes in non-pancreatic surgery patients requiring ICU care

Clinical Outcomes	Control-PN (Total group; N=29)	AG-PN (Total group; N=30)	Control-PN (Pan-creatic surgery only; N=17)	AG-PN (Pan-creatic surgery only; N=15)	Control-PN (Non-Pan-creatic surgery only; N=12)	AG-PN (Non-Pancreatic surgery only; N=15)
Total New Infections #	64	37	30	25	34	12 *
% Patients With New Bacteremias	8/29 (28%)	4/30 (13%)	3/17 (18%)	4/15 (27%)	5/12 (42%)	0/15 (0%) *
Patients With Multiple New Infections %	13/29 (45%)	8/30 (27%)	5/17 (29%)	4/15 (27%)	8/12 (67%)	4/15 (27%) **
Hospital Mortality%	5/29 (17%)	1/30 (3%)	0/17 (0%)	0/15 (0%)	5/12 (42%)	1/15 (7%) #
P Value		NS		NS		* P<0.01 ** P=0.034 # P=0.060 Versus Non-Pancreatic surgery subgroup