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結果：

No adverse reactions were found after the peptide containing solution was administered. The patients had normal plasma biochemistry values at baseline and on day 6 after operation in either Conv or Ala-Gln groups.

Although there was a tendency to have better cumulative nitrogen balance on the postoperative days in the Ala-Gln group, no significant difference was observed between the 2 groups. However, significant better cumulative nitrogen balance was observed on the 2nd, 3rd and 5th postoperative day than those in the Conv group in patients with APACHE II < 6, whereas no significant difference was noted in patients with higher APACHE II score (Fig 1). There was no difference in plasma Gln concentrations after TPN administration between the 2 groups. However, plasma Gln concentrations in all the 10 patients (n=10) with APACHE II < 6 were elevated, whereas plasma Gln concentration in 8 patients in the Conv group (n=11) were decreased on postoperative day 6 as compared with day 1. The changes between postoperative day 1 and 6 were significantly different between the 2 groups in the APACHE < 6. This phenomenon was not observed in the patients with APACHE II ≥ 6 (Table 2). In patients with APACHE II < 6, urine 3-methylhistidine concentrations on the postoperative day 6 were significantly lower than day 1, in both Ala-Gln and Conv groups. The reduction of urine 3-methylhistidine excretion after infusing TPN for 6 days was not obvious in patients with APACHE II ≥ 6 (Table 3). Patients in the Ala-Gln group had higher proportion of T lymphocyte and CD4 cells than did those in the Conv group (Table 4). The proportion of CD4 cells was greater after TPN administration for 6 days. Adverse effects were listed in Table 5. There was no mortality and no significant different adverse effects or morbidity between the two groups.

*此篇文章已被接受刊登在 Clinical Nutrition 雜誌上。

Figure Legend

Fig 1. Cumulative nitrogen balance in patients receiving TPN supplemented with L-alanyl-L-glutamine (Ala-Gln) or conventional (Conv) TPN. A) No statistically significant difference was observed between the 2 groups on different postoperative days in all patients. B) Ala-Gln group had better cumulative nitrogen balance on day 2, 4, 5 postoperatively in patients with APACHE II < 6. C) No significant difference was observed between the 2 groups on different postoperative days in patients with APACHE II \geq 6. Mean \pm SEM, significant between 2 groups, *p < 0.05

Table 1 Demographic data of patients

	Ala-GLN		Control	
	APACHE < 6	APACHE ≥ 6	APACHE < 6	APACHE ≥ 6
Age (years)	61.7 ± 11.2	70.1 ± 6.0	64.5 ± 7.6	70.6 ± 8.7
Weight (kg)	57.7 ± 8.6	56.3 ± 10.1	55.3 ± 8.6	59.8 ± 12.0
Height (cm)	160.45 ± 6.7	156.0 ± 6.1	158.8 ± 8.0	161.3 ± 9.0
Male/Female	4/6	10/5	6/5	8/4
Diagnosis:				
Gastric Ca	6	12	6	8
Pancreas Ca	3	1	2	2
Colon Ca	0	1	2	1
Hepatoma	1	0	1	0
Adenocarcinoma of duodenum	0	0	0	1
Rectal Adenocarcinoma	0	1	0	0

Table 2 Plasma glutamine concentration on day 1 postoperatively and on day 6 after TPN administration

	Conv	Ala-Gln
All patients	(23)	(25)
Day 1#	471.6±18.1	531.7±49.8
Day 6	485.0±20.2	523.5±29.2
Changes (day6-day1)	13.2±31.1	-16.8±32.9
APACHE II < 6	(11)	(10)
Day 1	499.9±30.5	512.2±36.7
Day 6	506.3±29.7	567.9±53.6
Changes (day6-day1)	6.2±30.2	99.6±42.5*
APACHE II ≥ 6	(12)	(15)
Day 1	443.3±17.1	540.1±70.2
Day 6	461.5±26.6	502.9±34.7
Changes (day6-day1)	24.5±27.2	3.5±34.7

#Day 1 represent the data obtained before TPN administration

Figures in parentheses indicate number of patients

*Significantly different from the Conv group (p< 0.03)

Table 3 Urine 3-methylhistidine concentrations on day 1 postoperatively and on day 6 after TPN administration

	Conv	Ala-Gln
All patients	(23)	(25)
Day 1#	136.1±20.0	113.5±13.9
Day 6	82.3±8.8	72.0±10.8
Changes (day6-day1)	-59.0±15.3	-49.5±18.7
APACHE II < 6	(11)	(10)
Day 1	136.7±26.7	125.1±21.1
Day 6	71.8±7.7*	60.8±16.4*
Changes (day6-day1)	-64.8±25.6	-66.8±15.3
APACHE II ≥ 6	(12)	(15)
Day 1	136.0±24.9	109.1±15.8
Day 6	73.3±12.4	68.2±10.3
Changes (day6-day1)	-52.6±21.0	-37.9±21.4

#Day 1 represent the data obtained before TPN administration

*Significantly different from day 1

Figures in parentheses indicate number of patients

Table 4 Blood T lymphocyte, CD4, CD8 cell and total lymphocyte count in 2 TPN groups on day 1 postoperatively and day 6 after TPN administration

	Conv	Ala-Gln
Day 1	(23)	(25)
T lymphocyte (%)	57.09 ± 2.52	65.95 ± 2.18*
CD4 (%)	34.68 ± 1.91	36.84 ± 1.89
CD8 (%)	20.87 ± 9.41	25.06 ± 1.94
Total Lymphocyte(x10 ³ /ml)	107.33 ± 9.89	107.07 ± 9.18
Day 6	(23)	(25)
T lymphocyte (%)	62.0 ± 2.62	69.72 ± 2.85*
CD4 (%)	41.76 ± 2.48#	46.69 ± 2.32*#
CD8 (%)	18.53 ± 1.75	20.38 ± 1.61
Total Lymphocyte(x10 ³ /ml)	130.6 ± 15.29	114.19 ± 10.68

*Significantly different from Conv group

#Significantly different from the corresponding group on day 1 postoperatively

Figures in parentheses indicate number of patients

Table 5 Summary of Adverse Events

	Ala-Gln		Conv		p-value
	Total=25		Total=23		
	N	(%)	N	(%)	
COPD Aggravated	0	(0.00)	1	(4.35)	0.479
Cath Lost	2	(8.00)	1	(4.35)	1.000
Fever	3	(12.00)	0	(0.00)	0.235
Tachycardia	1	(4.00)	0	(0.00)	1.000
Pleural Effusion	1	(4.00)	0	(0.00)	1.000
Hyperglycemia	3	(12.00)	2	(8.70)	1.000
Wound Infection	0	(0.00)	0	(0.00)	1.000
Leakage	0	(0.00)	0	(0.00)	1.000
Mortality	0	(0.00)	0	(0.00)	1.000

p-value: Test for equality between treatments using Fisher's Exact test.

COPD: Chronic obstructive pulmonary disease.

Fever: Only transit fever, without evidence of infection.

Pleural effusion: x-ray finding without symptoms.

