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The Effect of BCAA and Citrate Dialysate on the Nutritional Status of Chronic Hemodialysis Patients

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Objectives: Sarcopenia and malnutrition are common troublesome problems in chronic hemodialysis. BCAA (branched-chain amino acid) plays an essential role in synthesis of muscle proteins and is already widely used among healthy people for better exercise performance. However, its efficacy and safety are not well known yet for hemodialysis patients. Citrate is a well-known anticoagulant and antioxidant with anti-inflammatory properties. Therefore, citrate dialysate possibly improve nutritional status of chronic hemodialysis patients. The objective of this study was to evaluate the effect of BCAA and citrate dialysate on nutritional status of chronic hemodialysis patients.

Methods: : Among 48 chronic HD patients with low plasma albumin concentration (<3.8 g/dl), 24 patients with acetate dialysate were evenly divided into a BCAA treatment group and a control group. The remaining 24 patients with citrate dialysate were also evenly divided into a BCAA treatment group and a control group. During 4 months trial, BCAA groups received daily oral BCAA suspension (20gm/day, Aliver® Seoul Pharm.). The nutritional parameters (BMI, Mid-arm mass, Mid-arm circumference, hand-grip strength, albumin, prealbumin, transferrin, BUN, creatinine, total cholesterol, CRP, nPCR) of all groups were monitored

Results: After 4 months of BCAA trial, the mean plasma albumin concentration showed statistically significant increase in both citrate and acetate dialysate groups (Table1&2, p-value<0.05). Irrespective of BCAA administration, prealbumin tended to increase in citrate groups without statistical significance(Fig.1 &Table3). CRP showed decreasing tendency in citrate groups without statistical significance. BUN and creatinine levels were not different between BCAA and non-BCAA treated groups(Fig 2). Other nutritional parameters such as transferrin, nPCR, TC, BMI were also not different in both groups.

Conclusions: BCAA can significantly increase the level of albumin without increasing BUN and creatinine level. Theoretically, citric dialysate may be helpful to improve nutritional status of chronic HD patients. However, the results need to be confirmed in long term studies

Table 1: The mean plasma albumin conc. was increased in citrate dialysate groups

Group	Subgroup	Before	After (4 months later)	p-value
Citric acid dialysate	With BCAA	3.8±0.3	4.0±0.3	0.00476
	Without BCAA	3.8±0.2	3.9±0.3	0.16297
	p-value	0.788	0.650	

Fig2. The level of preBUN was not different between BCAA treated and non treated groups

