Effects of Nutritional Status and Oral Essential Amino Acid Replacement on Serum L-Carnitine Levels of Chronically Hemodialyzed Patients

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the normal range (21 ± 2.7 kg/m², 36 ± 3 g/1, 0.9 ± 0.1 g/kg/day, respectively).

Predialysis serum L-carnitine levels of the patients (56 ± 25 μ mol/l) were higher than those of controls (31 ± 9 μ mol/l; $p < 0.001$). We determined serum L-carnitine levels in 12 patients before and after an HD session (62 ± 24 and 26 ± 24 μ mol/l, respectively) and found a decrease of $60 \pm 33\%$ after HD. Serum L-carnitine levels were higher in patients with good nutritional state taking EAS tablets and were not different with respect to sex (table 1).

Dear Sir,

Predialysis serum L-carnitine levels have been found to be low [1], normal [2] and high [3] in regularly hemodialyzed patients. In humans, carnitine is synthesized in the liver and kidney from methionine and lysine amino acids, and taken up via dietary meat and milk products [4]. The aim of this study is to determine whether there is any effect of nutritional status and oral intake of carnitine precursors on serum L-carnitine levels of chronically hemodialyzed patients.

This study included 27 (16 males) chronically hemodialyzed patients (GFR = 8.5 ± 2.7 ml/min/1.73 m²) and 15 (8 males) healthy volunteers. The patients have been on hemodialysis (HD) thrice weekly (4h each dialysis) for 16 months (range 2-66) with a 1-m² cuprophane hollow-fiber dialyzer and acetate-containing dialysate. None of the patients had hepatic failure, and 18 patients were taking oral tablets (3×2 per day) containing essential amino acids (EAS; Fre-senius AG; methionine = 52 mg/tablet, lysine = 75 mg/tablet). Following an overnight fast, blood samples were taken at the beginning of a morning HD session. An L-carnitine enzymatic UV test kit (Boehringer-Mannheim; Cat. No. 1242008) was used for the determination of serum L-carnitine levels. Mean body mass index (BMI), serum albumin level and normalized protein catabolism rate (NPCR), which are some nutritional indexes, of the patients were within Table 1. Serum L-carnitine levels (μ mol/l) of the patients according to sex and nutritional status (mean $\pm$ SD)

Fagher et al. [5] could not detect any significant effect of L-carnitine supplementation on many clinical and metabolic abnormalities of patients on maintenance HD. However, they pointed out that their patients were in a good nutritional state and apparently not carnitine deficient. Finally, in the present study, it was shown that serum L-carnitine levels in chronically hemodialyzed patients, who had a better nutritional status and took carnitine precursors, were higher than those of the others. More detailed studies should be done on this subject.

KAHGEK

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