

P158 Is muscular mass affected by L-Carnitine levels in critically ill patients?

M Moukas, P Dimou, A Chalazonitis, A Patsalides, G Tsimitselis, S Georgakopoulou, N Koudounis, M Vasiliou and P Behrakis
Intensive Care Unit and Department of Radiology, Hellenic Red Cross Hospital, 1 Erythrou Stavrou str. Athens 11526, Greece

Introduction: The aim of our study is to investigate the change of blood and muscle Carnitine levels in patients of the Intensive Care Unit and investigate how the change in Carnitine levels affects muscular mass.

Method: In our double blind clinical study, forty-six ICU patients were randomly divided into two groups. Patients with either renal or liver insufficiency were excluded. Both groups of patients were on enteral or parenteral nutrition with 30 kcal/kg/day intake with 1 g/kg/day protein intake. The mean duration of hospitalization was 23.6 ± 8 days for group A and 26.9 ± 9 days for group B. All patients were under physical therapy for 60 min/day. Only group B patients received intravenous supplements containing 100 mg/kg/day L-Carnitine. Total and free Carnitine were measured from the blood of each patient at the time of admission and at the time of exit from the ICU. Muscle Carnitine levels were also studied with a triceps muscle biopsy at the same time. Muscle mass thickness was estimated by the same ultrasonographer in all cases. A 10 MHz frequency, linear high-resolution transducer was held longitudinal to the biceps muscle in the plane of maximum thickness.

Results: All values are expressed as mean \pm SD on admission and exit from the ICU. Blood results for Group A patients are: total Carnitine (nmol/ml) 78.14 ± 23.17 and

50.56 ± 21.23 ($P < 0.001$) and free Carnitine (nmol/ml) was 69.41 ± 23.77 and 42.34 ± 18.00 ($P < 0.001$) respectively. Group B has the following results: total Carnitine (nmol/ml) 74.08 ± 24.51 and 529.92 ± 228.45 ($P < 0.001$) and free Carnitine (nmol/ml) 65.59 ± 25.07 and 459.43 ± 162.12 ($P < 0.001$).

Muscle biopsy results are as follows: Group A patients had free Carnitine 1.50 ± 0.33 on admission and 1.06 ± 0.19 on exit ($P < 0.0001$), and total Carnitine 1.70 ± 0.29 and 1.10 ± 0.21 respectively ($P < 0.0001$). In Group B patients, free Carnitine was 1.53 ± 0.31 on admission and 1.99 ± 0.15 on exit ($P < 0.0001$), and total Carnitine 1.67 ± 0.29 and 2.23 ± 0.16 respectively.

Muscle mass (cm) measurement results for group A patients are: 2.6 ± 0.5 and 2.3 ± 0.6 ($P < 0.01$) whereas for group B patients they are 2.09 ± 0.5 and 2.31 ± 0.1 ($P < 0.001$) respectively.

Conclusions: In group A patients, blood and muscle Carnitine are decreased. Muscle mass is concomitantly decreased. The opposite results are obtained from group B (L-Carnitine supplementation). We conclude that L-Carnitine supplementation prevents muscle atrophy in critically ill ICU patients.