

Effect of Combination of L-Arginine and L-Carnitine on Serum AGEs Level, Kidney and Endothelial Function in Patients with Chronic Heart Failure - Pages 77-83

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Abstract: The aim of the study to evaluate the effect of combination of L-Arginine with L-Carnitine on GFR, serum AGEs level and endothelial function in chronic heart failure (HF) patients with preserved ejection fraction (HFpEF).

Materials and Methods: 35 patients with mean age 60,1 [56,7; 77,3] years with an established diagnosis of HFpEF were enrolled. The *patients were randomly and blindly divided into 2 groups*: first (1st) group pts were treated with a combination of L-Carnitine and L-Arginine in addition to standard treatment; 2nd group pts – with L-Arginine in addition to conventional treatment. Standard laboratory blood tests, lipid profile, glucose, renal and liver function tests, serum advanced glycation end-product (AGEs) level, echocardiographic examination, flow-mediated dilatation (FMD%) were performed for all patients baseline and after 10 days of treatment. The glomerular filtration rate (GFR) was estimated using the CKD-EPI formula.

Results: Median level of AGEs was 1.72 [1.34; 1.93] mg/ml. The level of AGEs was correlated with age ($R = 0.71$, $p < 0.05$), disease duration ($R = 0.69$, $p < 0.05$). After 10 days of treatment with a combination of L-Carnitine with L-Arginine mean AGEs was decreased by 13.1% in comparison with L-Arginine treatment group ($p = 0.0003$). After the treatment in 1st group mean AGEs was significantly lower in comparison with the 2nd group ($p = 0.004$). Baseline median level of GFR was 81.2 [72,1; 86,2] ml/min and correlated with disease duration ($R = 0.71$, $p < 0.05$), AGEs level ($R = -0.73$, $p < 0.05$). The inclusion combination of L-arginine aspartate with L-Carnitine contributed to the significant increase of GFR level ($p = 0.003$). The median FMD% level was 6.2 [4.4; 7.9] % and correlated with age ($R = -0.61$, $p < 0.05$), GFR ($R = 0.54$, $p < 0.05$). After the 10 days it had been established significant increasing of FMD% level on 47.9 % in 1st group ($p = 0.0005$), and on 29.3 % in 2nd group ($p = 0.003$). Endothelial function normalizing was achieved in 10 (66 %) pts of 1st group and in 9 (45%) pts of 2nd group ($p = 0.002$).

Conclusion: The combination of L-Carnitine, and L-Arginine improves kidney, endothelial function and contributes to decreasing of AGEs level in pts with HFpEF.

Keywords: L-arginine, L-carnitine, kidney function, endothelial function, chronic heart failure.