

## REDUCING ENDOTHELIAL DYSFUNCTION AND ARTERIAL STIFFNESS USING OMEGA-3 POLYUNSATURATED FATTY ACIDS IN HYPERTENSIVE PATIENTS WITH TYPE 2 DIABETES MELLITUS

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**Objectives:** to reduce endothelial dysfunction (ED) and arterial stiffness (AS) using omega-3 polyunsaturated fatty acids (PUFAs) in patients with arterial hypertension (AH) and concomitant type 2 diabetes mellitus (T2DM).

**Methods.** We examined 63 hypertensive patients with T2DM (34 males, aged  $61.3 \pm 4.2$  years). Baseline characteristics included history of AH ( $5.2 \pm 2.6$  years) and T2DM ( $6.1 \pm 0.5$  years). The level of HbA1c was less than 7.5%. All patients had the second stage of AH. Patients were divided into 2 groups: the 1<sup>st</sup> (n = 34) - received the standard therapy including ramipril 10 mg and atorvastatin 20 mg, the 2<sup>nd</sup> (n = 29) – in addition to the standard therapy received omega-3 PUFAs 2g/day. Control groups consisted of 20 healthy individuals of appropriate ages. AS was measured as carotid-femoral pulse wave velocity (PWV). ED evaluated by flow-mediated dilation (FMD) of the brachial artery by ultrasound imaging. Serum levels of asymmetric dimethylarginin (ADMA) were measured by ELISA. These parameters were evaluated at baseline and in 6 months.

**Results.** Addition of omega-3 PUFAs to the standard therapy increased FMD ( $3.57 \pm 2.21\%$  vs  $7.72 \pm 4.17\%$ ,  $p < 0.05$ ) and significantly reduced the level of ADMA ( $0.65 \pm 0.12$  vs  $0.51 \pm 0.09$  ng/mL) in the 2<sup>nd</sup> group after 6 month of treatment. ADMA levels inversely correlated with FMD in all patients ( $r = -0.47$ ;  $p < 0.05$ ). Treatment with omega-3 PUFAs resulted in a significant decrease in fasting triglyceride levels in the 2<sup>nd</sup> group of patients ( $2.1 \pm 1.23$  vs  $1.5 \pm 0.83$ ,  $p < 0.05$ ) and in serum total cholesterol levels ( $5.67 \pm 1.62$  vs  $4.8 \pm 1.41$ ,  $p < 0.05$ ). In the 2<sup>nd</sup> group we also registered the greatest reduction of PWV ( $18.8 \pm 1.08$  to  $17.9 \pm 0.92$  m/s). In the 1<sup>st</sup> group of patients there wasn't significant difference in PWV values after therapy. The largest decline in PWV was accompanied with significant supplementary blood pressure (BP) decrease, and was observed only in the 2<sup>nd</sup> group after 6 months of treatment ( $r = 0.34$ ;  $p < 0.05$ ).

**Conclusions.** Addition of omega-3 PUFAs to the standard therapy decrease ED and AS in hypertensive patients with T2DM and can promote supplementary BP decrease.