Relationship between interleukin-1beta and lipid profile in patients with type 2 diabetes mellitus and overweight

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Activation of systemic inflammation in patients with type 2 diabetes mellitus (DM2) can be associated not only with glucose toxicity and activation of pathological immune reactions, but also with other metabolic disorders. These changes are more characteristic for patients with overweight. Such a combined effect lead to additional risk for the development of cardiovascular complications, especially atherosclerosis and related diseases.

The **purpose** of our research was to evaluate the interconnection between the lipid blood spectrum and the interleukin-1β (IL-1β) in patients with DM2 with normal weight and overweight.

Methods. 102 patients (35-65 years old) with DM2 of moderate severity without signs of coronary artery disease, hypertension and heart failure were examined in endocrinology department of Kharkiv Regional Hospital. Duration of DM2 was from 1 to 8 years. All patients were divided into 2 groups according to body mass index (BMI): 1st group consisted of 44 people with a BMI to 29.9 kg/m^2 and in 2nd group was 58 patients with a BMI over 30 kg/m^2.The control group included 20 healthy individuals of corresponding age.

For the purpose of our research all patients were tested for total cholesterol (TC) and triglycerides (TG) - enzymatic photometric method using a set of «DAC-Spectro Med»; high density lipoprotein (HDL) - precipitation/enzymatic-photometric method using a set of «DAC-Spectro Med»; the level of low density lipoprotein (LDL) was calculated by the Friedewald's formula. The level of IL-1β (pg/mL) was determined by immune-enzyme assay using "Vector-Best" set of reagents.

Correlation analysis was performed among all studied parameters according to their distribution law using Statistica 6,0 licensed program.

Results. The level of IL-1β (pg/ml) in 1st group composed 11.87±0.25, and 14.25±0.22 in 2nd group, and 8.12±0.18 in control group (p<0.05). The value of TC (mmol/l) in 1st group was 4.75±0.17, 5.37±0.16 in 2nd group, and 4.06±0.12 in control group (p<0.05). The level of TG (mmol/l) in 1st group counted 1.59±0.04, 1.82±0.05 in 2nd, and 1.3±0.03 in the control group (p<0.05). Concentration of HDL (mmol/l) in 1st group was 1.25±0.03, 1.16±0.02 in 2nd group, and 1.16 ± 0.02 in control group (p<0.05). The level of LDL (mmol/l) in 1st group composed 2.77±0.08, 3.58±0.17 in 2nd group, and 2.01±0.04 in control group(p<0.05).

A significant reliable correlation was revealed between IL-1β and TG (R=0.38 (p≤0.05)) in 1st group, whereas in 2nd group a relationship was founded between IL-1β and TC (R=0.41 (p≤0.05)), between IL-1β and TG (R=0.45 (p≤0.05)) and between IL-1β and LDL (R=0.43 (p≤0.05)). No one correlation was detected in the control group.

Conclusion. We suppose that the increase of pro-inflammatory IL-1β is associated with the development of diabetic dyslipidemia, especially in patients with type 2 diabetes with concomitant obesity. The received data indicate that IL-1β may be considered as a marker and mediator of atherosclerosis in such patients.