

# CYTOKINEMIA LEVEL AS AN ADDITIONAL CARDIOVASCULAR RISK FACTOR IN COMORBID PATIENTS: GOUTY

## ARTHRITIS AND NONALCOHOLIC FATTY LIVER DISEASE

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### Purpose

To identify the main cardiovascular risk factors, including the level of key proinflammatory cytokines (tumor necrosis factor  $\alpha$  (TNF- $\alpha$ ), interleukin 6 (IL-6)) in patients with gouty arthritis (GA) combined with nonalcoholic fatty liver disease (NAFLD).

### Materials and methods

Materials and methods of the study. The study was conducted on the basis of the rheumatologic department of the Clinical Hospital №25, in which 70 patients with gouty arthritis were included. All patients underwent standard medical examination, including anthropometry with calculation of body mass index (BMI), laboratory examination with determination of alanine aminotransferase, aspartate aminotransferase, glucose, insulin, lipid spectrum, TNF- $\alpha$  and IL-6 in serum, calculation of HOMA-IR index. The instrumental diagnostic methods included ultrasound examination of abdominal cavity organs.

### Results

All patients were divided into two groups: group I included 50 patients with GA and having signs of NAFLD, group II - 20 patients with GA without NAFLD. Among those examined in the main group, 34 (68%) men prevailed, their average age was 52 years, average duration of the disease was 8.2 $\pm$ 3.5 years. A family history of GA was traced in 25 patients (50%) with the debut of GA at 35.6 $\pm$ 10 years. The control group of patients was completely comparable with the main group in terms of sex, age, and course of the disease. Signs of liver steatosis were present in 31 (62%) patients, nonalcoholic steatohepatitis - 19 (38%). Arterial hypertension (AH) was detected in 64 patients (91%). In group I the mean level of blood pressure (BP) was 150 $\pm$ 10/85 $\pm$ 5 mmHg, in group II - 135 $\pm$ 10/80 $\pm$ 5 mmHg. Fasting glycemia level in group I was 8.0 $\pm$ 2.4 mmol/L, in group II - 4.8 $\pm$ 2.5. The level of total cholesterol and triglycerides was significantly higher in group I. Higher BMI was noted in group I: all patients were diagnosed as overweight or obese. Mean TNF- $\alpha$  level in group I was 1.277 $\pm$ 0.142 pg/mL, in group II - 0.506 $\pm$ 0.028 pg/mL; mean IL-6 level in group I - 14.03 $\pm$ 2.75 pg/mL, in group II - 1.46 $\pm$ 0.81 pg/mL.

Table 1: Metabolic syndrome and cytokine parameters in patients with gouty arthritis (GA) with nonalcoholic fatty liver disease (NAFLD) and without liver damage

Indicators	GA patients with NAFLD	GA patients without NAFLD
blood pressure, mm Hg	150 $\pm$ 10/85 $\pm$ 5*	135 $\pm$ 10/80 $\pm$ 5
fasting glycemia, mmol/L	8,0 $\pm$ 2,4*	4,8 $\pm$ 2,5
total cholesterol, mmol/L	6,4 $\pm$ 0,68*	5,3 $\pm$ 0,42
triglycerides, mmol/L	2,24 $\pm$ 0,31*	1,87 $\pm$ 0,29
TNF- $\alpha$ , pg/mL	1,277 $\pm$ 0,142*	0,506 $\pm$ 0,028
IL-6, pg/mL	14,03 $\pm$ 2,75*	1,46 $\pm$ 0,81

\*statistically significant ( $p \leq 0,05$ )

### Conclusions.

In patients with GA, the main cardiovascular risk factors are both traditional (age, male gender, hyperuricemia, hypertension, hyperglycemia, hypercholesterolemia, obesity) and GA-related (duration of the disease, level of proinflammatory cytokines: TNF- $\alpha$ , IL-6). The study revealed a high prevalence of NAFLD in patients with GA, which increases metabolic disorders (increases insulin resistance, BMI, BP, total cholesterol and cytokines (TNF- $\alpha$ , IL-6)), which contributes to the progression of atherosclerosis.

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