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**ASSOCIATION BETWEEN HOMOCYSTEINE CONTENT
AND BMI WITH C677T POLYMORPHISM OF THE
METHYL-TETRAHYDROFOLATE REDUCTASE GENE IN PATIENTS
WITH NON-ALCOHOLIC FATTY LIVER DISEASE**

According to various data, non-alcoholic fatty liver disease (NAFLD) occurs in 30-50% of the adult population and is one of the main causes of liver dysfunction in developed countries. The widespread of overweight makes the problem of NAFLD relevant among both adults and children. NAFLD, together with obesity and hypertension, are part of the metabolic syndrome, the pathogenesis of which is diverse and includes many factors. One of the causes of pathological changes in the liver is considered to be homocysteine, the role of which is proven in metabolic disorders.

The study aimed to investigate the level of homocysteine in blood plasma and BMI depending on the C677T polymorphism of the MTHFR gene in patients with NAFLD.

Materials and methods: The study involved 124 patients diagnosed with NAFLD. Variation of the diagnosis was performed based on anamnestic, clinical, and laboratory data, the presence of fatty hepatosis was confirmed by ultrasound. Plasma homocysteine levels were determined by enzyme-linked immunosorbent assay. The calculation of BMI was performed according to the formula $\text{Kettle weight (kg) / height (m)}^2$. Determination of allelic polymorphism was performed by PCR with detection of results by the hybridization-fluorescence method in real-time.

All patients were divided into three groups depending on allelic polymorphism.

Group I - monozygotes on the main allele C / C - 56 patients, group II - heterozygotes C / T - 48 patients and group III monozygotes on the minor allele T / T - 20 patients.

Results: The content of homocysteine in patients of group I $15.1 \pm 1.13 \mu\text{mol} / \text{l}$, group II - $18.3 \pm 1.88 \mu\text{mol} / \text{l}$ and group III - $21.9 \pm 1.76 \mu\text{mol} / \text{l}$, at $p < 0, 05$. BMI in patients of group I - $32.7 \pm 2.6 \text{ kg} / \text{m}^2$, group II - $35.9 \pm 1.87 \text{ kg} / \text{m}^2$, group III - $38.5 \pm 2.03 \text{ kg} / \text{m}^2$, at $p < 0, 05$. In addition, the examined patients found a direct correlation between the mean strength between BMI and homocysteine content ($r = 0.540$ $p < 0.01$).

Conclusions: In patients with nonalcoholic fatty liver disease, the level of homocysteine increases with increasing BMI. Patients homozygous for the minor T allele have significantly higher levels of homocysteine and BMI.