PATHOGENETIC ASPECTS OF ANEMIA SYNDROME IN PREGNANT WOMEN WITH CARBOHYDRATE METABOLISM DISORDERS

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Aims: The aims of the study is to estimate the levels of IL-6 and CRP in pregnant women with metabolic disorders; to study the role of genetic factors, controlling enteroinsulin hormonal system, in anemia syndrome development in pregnant women with metabolic disorders.

Materials & Methods: 70 pregnant women (second-third trimesters, age - 22-40 years) were studied: 24 of them had normal body mass index (BMI) and gestational diabetes mellitus (GDM); 46 patients had both obesity and GDM. Anemic syndrome was diagnosed and specified on the base of complex analysis of laboratory data. Control group consisted of 20 healthy women of the same age. IL-6 serum concentration (pg/ml) was measured in venous blood with ELISA technique (VectorBest, Russia), CRP concentration – using turbidimetric method on Cobas c311 analyzer (Roche, Germany). We used Shapiro-Wilk W test for normality of data distribution evaluation (p=0.05). The significance of difference between the independent comparison groups was estimated by the Mann-Whitney criterion. Real-time PCR (GeneJET, Thermo, USA) was used to study polymorphic variants of proglucagon gene (GCG), glucagon-like peptide-1 (GLP-1) gene and transcription factor 7-like 2 gene (TCF7L2). To compare allele frequency in two groups Pearson's Chi-square test was used. The results of molecular-genetic testing were analyzed using odds ratio criterion OR and 95% confidence interval (CI).

Results: IL-6 concentration was higher in those women, who had both anemia of chronic disease and GDM (irrespective of BMI) (3.88 (3.25-6.10) pcg/ml) compared to patients with GDM without anemic syndrome (1.73 (1.23-2.91) pcg/ml) ($p<0.05$). IL-6 level in women with GDM and normal BMI was 2.9 (2.17-5.43) pcg/ml, in patients with both GDM and obesity – 2.26 (2.07-2.34) pcg/ml, in the control group – 0.00 (0.00-3.78) pcg/ml ($p<0.05$). CRP concentration was significantly higher in women with GDM (7.53 (4.44-10.25) mg/l) and patients with both GDM and obesity (9.75 (8.03-11.1) mg/l), than in healthy pregnant women (3.68 (2.88-4.48) mg/l) ($p<0.05$). We found out that C-allele carriers of TCF7L2 gene, rs7903146 had 70% lower risk of anemia development ($\chi2=4.7$, $p=0.029$; OR=0.3, 95% CI 0.07-0.89). Carriership of G-allele of GCG-gene was protective concerning GDM development ($\chi2=3.41$, $p=0.064$; OR=0.3; 95% CI 0.27–0.48), whereas A-allele carriership reduced the risk of anemia of chronic disease development ($\chi2=6.5$, $p=0.01$; OR=0.1; 95% CI 0.05–0.25). Carriership of G-allele of GIP-gene, rs3848460 was protective concerning anemia including anemia of chronic disease development ($\chi2=5.5$, $p=0.019$; OR=0.7, 95% CI 0.59-0.88).

Conclusion: The development of anemia, including anemia of chronic disease, in pregnant women with obesity and GDM is associated with subclinical inflammation, higher IL-6 and CRP levels and with the carriership of certain polymorphic variants of genes controlling enteroinsulin hormonal system.

Biography

N N Musina graduated from Siberian State Medical University with honors and a gold medal in 2015. In 2017 graduated from Tomsk Polytechnic University and received a diploma of professional retraining "Translator in the field of professional communication". In 2017 graduated from residency in Endocrinology and Diabetology department.

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