Acromegaly is a severe neuroendocrine disease that is caused by excessive secretion of growth hormone and insulin-like growth factors. The disease is burdened by the development of comorbid pathology, in particular, disorders of carbohydrate metabolism. In adipose tissue growth hormone causes lipolysis, which leads to increased lipotoxicity, increase the number of substrates for gluconeogenesis and high production of glucose by the liver. Secondary diabetes mellitus complicates the course of the underlying disease, worsening the quality and reducing the life expectancy of patients with acromegaly. Currently, the diagnostic practice is being implemented studies of candidate genes, mutations of which cause the development of various diseases. Currently, more than 1,500 genes associated with multifactorial human diseases are known. The study of polymorphic markers (polymorphisms of Pro12Ala in PPARG gene, Pro12Ala PPARG2 gene polymorphism, Gly482Ser polymorphism of the PPARGC1A gene polymorphism Ala203Pro gene PPARGC1B, Arg223Glr polymorphism of gene LEPR, polymorphism A23525T gene FTO, PPARG C1431T polymorphism of the gene) allows to assess the risk of developing diabetes and obesity in the population.

Materials and Methods. Currently, the register of the Ryazan region consists of 65 patients with acromegaly. It includes 56 (86.1%) women, 9 (13.9%) men aged 56.4±1.2 years. 26 (40%) patients underwent surgical treatment – endonasal transsphenoidal adenomectomy, 21 (32.3%) is on primary drug therapy with somatostatin analogues (Octreotide-Depo, Octreotide-Long 20-40 mg 1 time in 28 days) in the form of monotherapy, as well as in combination with dopamine receptor agonists (cabergoline 0.5 mg 2-3 times a week), 18 (27.7%) underwent gamma-ray therapy and stereotactic radiosurgery. In the endocrinology Department of GBU RO Regional clinical hospital 35 patients took part in the genetic research. 1 group consisted of 13 patients with acromegaly with secondary diabetes mellitus, 2 group of 10 patients with acromegaly without diabetes, 3 group -12 patients with type 2 diabetes. The study involved patients who meet the inclusion criteria: signed informed voluntary consent, age of patients from 30 to 67 years, diagnosis of “Acromegaly” and / or “type 2 Diabetes mellitus”, established according to the clinical recommendations of the Russian Association of Endocrinologists. The study did not include patients with uncomplicated endocrine, cardiovascular disease, severe liver and kidney dysfunction, type 1 diabetes. Patients with DM received oral hypoglycemic therapy in the form of mono-, combination therapy, as well as in combination with insulin. Determination of genetic polymorphism of diabetes mellitus and obesity [PPARG, PPARG2, PPARGC1A, PPARGC1B, LEPR, FTO] was carried out on the basis of the Central research laboratory of Ryazan state medical University by allele-specific PCR with subsequent electrophoretic separation of amplification products. The material for molecular genetic analysis was DNA samples was isolated from whole blood leukocytes using the reagent “DNA-Express blood”.

Results. Violation of carbohydrate metabolism was revealed in 37 (56.9%) patients with acromegaly. 7 (18.9%) group revealed impaired fasting glycemia, 3 – (8.1%) – impaired glucose tolerance, 27 (73%) – diabetes. The analysis of the distribution of gene polymorphisms in the examined groups (acromegaly + DM, acromegaly, type 2 diabetes), significant differences (p<0.05) detected by the Gly482Ser genotype at the PPARGC1A gene (mutation 1aPPARG). In the study of this mutation, the predominance of the Gly482Ser genotype in the group of patients with type 2 diabetes (83.4%) is noteworthy. The number of mutant alleles 482Ser in the PPARGC1A gene (mutation 1aPPARG), 203Pro PPARGC1B (mutation 1bPPARG) tends to increase in the group of patients with type 2 DM (50% and 25%). The comparative analysis of the distribution of the frequencies of genetic alleles of diabetes mellitus showed no differences in patients with isolated acromegaly and a combination of acromegaly and diabetes. Thus, according to the register of the Ryazan region, there is a high prevalence of diabetes mellitus in patients with acromegaly. The development of this comorbid pathology is due to a decrease in insulin sensitivity, inhibition of glucose intake into peripheral tissues, stimulation of gluconeogenesis in the liver as a result of growth hormone.

Research perspective. The heterogeneous genotype of the PPARGC1A gene (Gly482Ser) is associated with the development of type 2 diabetes, and can be used to diagnose and predict the development of this disease. The study of the prevalence, pathogenesis of diabetes, glycemic variability in patients with acromegaly has scientific and practical interest for improving the treatment of comorbid pathology in neuroendocrine diseases.

References:


Key words: acromegaly; polymorphism; genetic mutations; diabetes mellitus.

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COMPARATIVE ASSESSMENT OF DIFFERENT DIAGNOSTIC SCORES FOR PREDICTION OF NON-ALCOHOLIC LIVER DISEASE

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Several steatosis risk scores were developed in order to optimize identification of persons with NAFLD (fatty liver index - FLI, hepatic steatosis index - HSI).

Our aim was to determine which one is most applicable to our study group.

Materials and Methods. 77 non-smokers with abdominal obesity without cardiovascular diseases, renal diseases, infective, malignant and autoimmune diseases. Anthropometric parameters, markers of glucose and lipid metabolism, serum levels of inflammatory markers, levels of liver enzymes, as well as ferritin and uric acid were assessed in all subjects. Fatty liver was assessed as presence or absence and grading of hepatic steatosis obtained by ultrasound scan using National Health and Nutrition Examination Survey.

Results. Anthropometric parameters as well as liver enzymes, uric acid and hsCRP were significantly higher in patients with Non-alcoholic fatty liver disease (NAFLD) (BMI 28.05±4.79 vs 34.38±9.73 kg/m², p=0.001; WC 96.15±14.27 vs 108.05 ± 11.47 cm, p=0.001; SBP 122.42±10.62 vs 128.98 ±8.67 mmHg, p=0.01; DBP 78.33±7.57 vs ± 5.94 mmHg, p= 0.001; hsCRP 1.98± 2.34 vs 4.34±5.56 mg/l, p=0.004; uric acid 296.76±74.06 vs 358.02±83.29 µmol/l, p=0.001; AST 21.70±5.21 vs 23.93±6.91 U/L, p= 0.014; ALT 23.00 ± 11.75 vs 30.50 ±13.70 U/L, p= 0.007). Factor derived from factor analysis that had incorporated waist circumference, hip circumference, body mass index, systolic and diastolic blood pressure, fibrinogen, hsCRP, glucose and uric acid had had best discriminatory power followed with fatty liver index score (FLI) and hepatic steatosis index (HSI).

Further trails are needed to adjust existing steatosis risk scores and incorporate other markers of steatosis such as uric acid.

Key words: Non-alcoholic fatty liver disease, fatty liver index score, hepatic steatosis index

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EFFICIENCY EVALUATION OF A HEALTHY LIFESTYLE: CLINICAL FEASIBILITY OF DETERMINING BIOMARKERS - ARGINASE AND ORNITHINE DECARBOXYLASE IN PATIENTS WITH CHRONIC NON-COMMUNICABLE DISEASES

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In the 21st century, the significant prevalence of chronic non-communicable diseases (NCDs) is a topical issue of the world-class level. Up to 60% of the adult population and almost 20% of children suffer from NCDs. In the world, the “Global WHO Action Plan on Prevention and Control of Non-Communicable Diseases in 2013-2020” has been intensified [4]. Ukraine continues to implement the National Program “Health - 2020: Ukrainian Dimension” [1, 2]. Within the framework of its concept, we carry out an initiative research project “Development of algorithms and technology for introducing a healthy lifestyle in patients with non-communicable diseases based on the study of psycho-emotional status” [State registration No. 0116U007798, UDC 613:616-052:159.942:616-03] [3]. According to the research, scientifically based methods for assessing healthy lifestyle in medical practice, and in particular, in patients with NCDs, have not been developed and used in practical medical practice yet. In the course of work with patients, there is a need for an objective assessment of their health status by biochemical indicators, in particular, indicators of the functional state of the liver. It is estimated that the detoxifying function of hepatocytes can indicate the level of total exotoxic effects on the patient’s body. The evaluation of the protein synthetic function may show the total level of metabolic processes in the patient. The generally accepted methods for assessing the detoxifying function of the liver (based on the content of ammonia and phenols, loading tests, etc.) are characterized by low sensitivity and are not sufficiently informative in mild to moderate hepatic lesions. At the same time, the vast majority of modern