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The Role of Early Diagnosis of Carbohydrate Metabolism Disorders in the Prevention of Diabetes Mellitus and Cardiovascular Complications

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ABSTRACT

In Uzbekistan, as elsewhere in the world, various categories of hyperglycemia, as well as the associated metabolic syndrome (MS), are widespread. Targeted measures are being taken in our country to reduce the risk of chronic noncommunicable diseases (NCDs). These measures include the prevention, treatment, and management of both NCDs and their associated risk factors. Particular attention is paid to type 2 diabetes and comorbid conditions. Furthermore, the population health program prioritizes the prevention of diseases, early mortality, and disability. The Resolutions of the President of the Republic of Uzbekistan No. PP-38 “On additional measures to deepen reforms in the healthcare sector” dated January 22, 2024 and No. PP-4063 “On measures to prevent non-communicable diseases, support a healthy lifestyle and increase the level of physical activity of the population” dated December 18, 2018 are aimed at resolving these issues. Today, there are about 352.1 million people with impaired glucose tolerance (IGT) in the world. By 2045, the number of people with IGT aged 20-79 years is expected to increase to 587 million, which will be 8.3% of the adult population. Currently, much attention is paid to the study of latent diabetes mellitus. This concept is consonant with the term prediabetes. Prediabetes includes IGT and impaired fasting glycemia. In this condition, glycemia indicators are above normal, but have not yet reached the indicators of T2DM. It is known that prediabetes significantly increases the risk of developing not only diabetes mellitus, but also cardiovascular diseases from endothelial dysfunction to heart failure, which significantly worsens the patient's quality of life and prognosis. Patients with impaired glucose tolerance (IGT) traditionally belong to the high-risk group for developing type 2 diabetes mellitus (T2DM). Diagnosing early disorders of carbohydrate metabolism in patients with obesity and type 2 diabetes is strategically justified, since, given that hyperglycemia often has a mild clinical manifestation and can remain undiagnosed for a long time, preventive measures can delay or prevent the development of both diabetes itself and its complications.

KEYWORDS: prevention, glycated hemoglobin (HbA1c), glucose tolerance test, fasting glucose disorder

Objective. To evaluate the dynamics of body mass index (BMI), fasting plasma glucose values in venous blood and after a oral glucose tolerance test (OGTT) in patients who received non-drug therapy and took metformin for a year.

Materials and methods. Forty-two patients were examined, who were diagnosed with IGT based on the results of the OGTT. The average age of the examined patients was 45 ± 1.2 years, of which 60% were men and 40% were women. The patients followed a hypocaloric diet and physical activity (150-200 minutes per week) as non-drug correction. They also received drug therapy with metformin at a dose of 850 mg 2 times a day for a year. The following parameters were studied in the work: BMI, fasting plasma glucose, plasma glucose 2 hours after OGTT, glycated hemoglobin (HbA1c).

Results and discussion. Before treatment, the average BMI in the study group of patients was 31.8, after one year it was 28.8, p-criterion <0.05 ; the average fasting plasma glucose was 6.5 mmol/l, after treatment 6.1 mmol/l, p-criterion <0.05 ; the average plasma glucose after OGTT before treatment was 8.8 mmol/l, after one year of treatment the average plasma glucose after OGTT was 7.7 mmol/l, p-criterion <0.05 ; the average glycated hemoglobin HbA1c before treatment was 6.5%, after one year of treatment the average value after HbA1c was 4.8%, p-criterion <0.05 .

Conclusions. The results of the study demonstrate a statistically significant decrease in BMI, fasting plasma glucose levels and those after a 75 g load. glucose, the average HbA1c value in the group of patients who used non-drug and drug correction as therapy for IGT.