American Journal Of Biomedical Science & Pharmaceutical Innovation
(ISSN – 2771-2753)
VOLUME 04 ISSUE 03 PAGES: 44-51
SJIF IMPACT FACTOR (2022: 5. 705) (2023: 6.534) (2024: 7.7)
OCLC – 1121105677
Publisher: Oscar Publishing Services

Journal Website: https://theusajournals.com/index.php/ajbspi

Research Article

PREVENTION OF TYPE 2 DIABETES MELLITUS

Submission Date: March 20, 2024, Accepted Date: March 25, 2024,
Published Date: March 30, 2024
Crossref doi: https://doi.org/10.37547/ajbspi/Volume04Issue03-06

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ABSTRACT

Prevention of type 2 diabetes mellitus and complications is an urgent problem in modern medicine. In patients with a body mass index (BMI) above 25 kg/m2, indicators of markers of carbohydrate metabolism (serum glucose - fasting and postprandial glycemia, glycosylated hemoglobin and urine glucose) and lipid metabolism - total cholesterol (TC), triglycerides (TG), lipidogram (low-density lipoprotein cholesterol - LDL cholesterol, atherogenic index - AI is significantly higher, and high-density lipoprotein cholesterol - HDL cholesterol is significantly lower than in patients with normal body mass index (BMI) and abdominal index (AI). A significant positive relationship between age, abdominal index, BMI, AI, glucose level in blood serum. Assessment of markers of carbohydrate and lipid metabolism should be included in the list of mandatory examinations of patients over the age of 30 years, and be strictly individual. There is a relationship between the progression of carbohydrate metabolism disorders and changes in lipid parameters metabolism in the examined women.The population should be widely informed about the development of type 2 diabetes mellitus and the progression of complications.

KEYWORDS

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Diabetes mellitus type 2, atherogenicity index. lipid metabolism, abdominal index, glucose, glycated hemoglobin, insulin, body mass index, carbohydrate metabolism.

INTRODUCTION

The term "diabetes mellitus", as defined by the World Health Organization (WHO), means a metabolic disorder of multiple etiologies, which is characterized by chronic hyperglycemia with disturbances in the metabolism of carbohydrates, fats and proteins as a result of disturbances in insulin secretion and / insulin action. Diabetes is the only non-communicable disease (meaning especially dangerous infections - plague, smallpox, etc.) taken under control by the United Nations (UN). Diabetes mellitus (DM) - type 2, the most common endocrine disease, represents a serious medical and social problem due to the widespread progressive increase in incidence, chronic course and high frequency of disabling complications [1; 4]. According to forecasts, by 2040 their total the number will reach 642 million1 [4]. Every 6 sec. One person in the world dies from diabetes and its complications2.

1 IDF Diabetes Atlas. 7th ed. 2015 [Electronic resource]. URL: http://www.diabetesatlas.org (access date: 12/09/2018) 2 Ibid. 3 Petri C., Stefani L., Bini V., Mascherini G., Francini L., De Angelis M., Galanti G. Life style and nutrition habits in type 2 diabetes [Electronic resource]. URL: https://www.researchgate.net/publication/278024473 (access date: 12/09/2018)

Disorders of lipid metabolism, changes in body weight and abdominal index have a huge impact on carbohydrate metabolism. Currently, among the leading causes of carbohydrate metabolism disorders are an unhealthy lifestyle, in particular unhealthy diet, low physical activity, emotional stress, etc.3 [27; 33; 36]. This prompted the development of behavioral therapy rules for people with carbohydrate metabolism disorders, which include 7 basic principles: 1) healthy eating; 2) physical activity; 3) blood glucose monitoring; 4) taking medications1 5) preventing stress; 6) risk reduction; 7) correct behavior in case of illness [17; 21; 23; 28]. The most common disorder of carbohydrate metabolism is hyperglycemia, which is characterized by a persistent increase in blood glucose levels (above 6.1 mmol/l in fasting venous blood) and is one of the symptoms of type 2 diabetes mellitus.

Target: assess patients' awareness of the importance of carbohydrate and lipid metabolism disorders as a risk factor for the development and progression of complications of diabetes mellitus

Materials and methods: The study included 280 women living in the Andijan region, aged from 30 to 65 years, the average age was 47.0±2.26 [Me 45.5; 95%CI 41.6-46.5] years.

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The control group included 40 women of similar age without carbohydrate disorders. fat metabolism. Average age 47.4±3.69 [Me 45.5; 95%CI 45.1-47.6] years.

The surveyed women were interviewed and questioned on the basis of a special questionnaire compiled by endocrinologists of our department, BMI was determined (according to the classification of overweight in adults depending on BMI according to WHO, 1997; 16-18.5 kg/m2 underweight, norm 18.5- 24.9 m/kg2, overweight 25-29.9 kg/m2, obesity 1st degree 30-34.9 kg/m2, obesity 2nd degree 35-40 kg/m2, 40 kg/m2 and more obesity 3rd degree), abdominal obesity according to WHO with the calculation of the ratio of waist circumference (WC) to hips (HC) measured in centimeters.

According to the World Health Organization (WHO) data collection protocol,[6] waist circumference should be measured at the midpoint between the lower edge of the last palpable rib and the upper part of the iliac crest. The measurement is taken with a non-stretch tape at a constant tension of 100 g. The pelvic circumference is measured around the widest part of the buttocks, the tape is held parallel to the floor. For both measurements, the person should wear a minimum of clothing and stand with their feet together, arms at their sides, and body weight evenly distributed. The patient should be relaxed and measurements should be taken during the expiratory phase during normal breathing. Each measurement should be repeated twice; If the measurements are within 1 cm of each other, the average should be calculated. If the difference between two measurements exceeds 1 cm, the two measurements must be repeated. [7]

WC and BMI (more than 0.85 and 30 kg/m2, respectively, in women is considered abdominal obesity). The levels of fasting glucose, insulin, glycated hemoglobin, TC, TG, HDL-C, LDL-C, in the blood were determined. The atherogenic index (AI) was calculated,

according to the formula CA = (total cholesterol - HDL/HDL), the norm of the coefficient is -3.0

RESULTS AND DISCUSSION

An analysis of the results of a survey of women showed: 65% of women were not aware that an increase in the abdominal index, BMI, disorders of carbohydrate and lipid metabolism leads to the development of type 2 diabetes mellitus and the progression of its complications. 70% of respondents did not follow a proper diet. Among women, overweight was detected in 90 women (32%), 42 (15%) were obese, and 20 (8%) were underweight. Among overweight women, 75 fasting blood glucose levels were 5.2 - 5.9 mmol/l, 9 women had 6.0 - 6.9 mmol/l (glycated hemoglobin 6.5 - 6.7%, 6.8-7.0, respectively), 63% of the examined women on the lipid profile, HDL levels were below standard values. Of the 42 patients with stage 1 obesity (BMI 30-34.9 kg/m2), 27 women (64%) suffered. Patients with high levels of the

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atherogenic index and BMI, in comparison with the control group, had statistically significantly high levels of LDL cholesterol and significantly higher levels of insulin (norm 3-25 mKed/l in adults) and glycated hemoglobin in the blood, as well as relatively high levels of total cholesterol (4.97±0.43mmol/l vs 3.38±0.32mmol/l; P=0.05) and TG (2.03±0.30mmol/l vs 0.94±0.10mmol/l; P=0.05), as well as higher AI (3.33±0.27 versus 1.91±0.35; P=0.01). While HDL cholesterol levels (1.13±0.03 mmol/l) were significantly lower than in the group without carbohydrate metabolism disorders.

CONCLUSIONS

1. Patients should be aware of the impact of carbohydrate and lipid metabolism disorders on the development and progression of type 2 diabetes mellitus and trained in preventive measures.

2. An increase in the abdominal index and BMI correlated with the indicator of impaired fasting glycemia, the level of glycated hemoglobin, as well as the values of total cholesterol, triglycerides, and LDL cholesterol. AI is significantly higher, and HDL-C is significantly lower than in women with normal BMI and abdominal index.

3. A positive relationship was found between age, BMI and AI.

4. Assessment of lipid metabolism, BMI, and abdominal index should be included in the list of mandatory examinations of patients with impaired carbohydrate metabolism.

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