

Clinical Symptoms In Patients With Prediabetes

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Abstract—The article presents the results of the study of the frequency of individual clinical symptoms characteristic of diabetes mellitus in persons with prediabetes. It was found that symptoms such as dry mouth, thirst, increased fluid intake, itching of the skin, various sensations characteristic of angiopathy, are often found in patients with prediabetes. The frequency and severity of these symptoms were associated with blood glucose levels. The authors came to the conclusion that in mass surveys of the population, at the first stage, a questionnaire should be used to identify clinical manifestations of diabetes mellitus. As a result of the survey, a high-risk group can be identified. In the future, this group should study the level of blood glucose, glycated hemoglobin, and other studies. Based on the results obtained, targeted prevention and treatment of prediabetes should be carried out.

Keywords - diabetes, prediabetes, symptoms, survey, questionnaire

I. INTRODUCTION

Diabetes prevalence rates remain high. According to IDF [1], in 2017, the incidence of diabetes at the age of 20-79 years was estimated at 8.8%. The prevalence of diabetes is expected to rise to 9.9% in 2045.

A 2017 report by the Center for disease control and prevention (CDC) indicated that 30.3 million adults in the United States suffer from diabetes mellitus. [2] The report also reports that 84.1 million adults in the United States have prediabetes. Although people with prediabetes have higher blood sugar levels than normal, some doctors do not consider this a pathology. However, according to the CDC, people with prediabetes often develop type 2 diabetes if they do not receive treatment.

Prediabetes is a chronic carbohydrate metabolism disorder in which fasting blood glucose levels and/or 2 hours after carbohydrate loading are higher than normal, but lower than in diabetes [3]. The prevalence of prediabetes varies widely from country to country. This is due to both the characteristics of populations and differences in research methods [4]. Nevertheless, it should be recognized that the prevalence of prediabetes is growing rapidly around the world.

For early diagnosis of prediabetes and timely prevention of type 2 diabetes, adequate awareness as

doctors is necessary. And patients about early signs of prediabetes and diabetes. The role of mass media in the prevention of diabetes and prediabetes studied on a nonlinear mathematical model [5]. The findings suggest that outreach programs in the media enable a reduction in the frequency of diabetes, reduce complications, and improve quality of life.

Early diagnosis of prediabetes is important in the prevention of diabetes. Currently, for the diagnosis of prediabetes and diabetes, such methods as the study of fasting glucose and after sugar load, glycated hemoglobin (HbA1c), glucose in the urine, insulin are used. However, practical medicine needs more simple and affordable methods of diagnosis of these diseases. The survey method of diagnosis of prediabetes and diabetes refers to such practices. A focused survey of the patient can serve as the primary screening test for detecting at-risk groups. The patient's purposeful test can help the primary screening test for revealing the groups of the risk of diabetes and prediabetes.

Early diagnosis of prediabetes becomes more relevant because its prevalence is rapidly increasing. According to the National report on diabetes statistics in the United States in 2009-2012, 37% of the population over 20 years suffered from prediabetes. More than half of people (51%) had prediabetes at the age of 65 years [7]. As early as 2010, the prevalence of prediabetes in the world was 343 million, and by 2035, the world is expected to increase the prevalence of prediabetes to 471 million people [8]. However, the prevalence of prediabetes varies significantly from 5.8% in South-East Asia to 11.4% in North America and the Caribbean in different regions of the world [7]. Currently, the prevalence of prediabetes in China is 19.8%, and sugar - 9.1% [9].

Against the background of the wide prevalence of prediabetes, great importance should be given to the consequences that can lead to prediabetes. Patients with prediabetes and diabetes have a high incidence of hypertension, dyslipidemia, and obesity were the highest in participants with previously diagnosed diabetes. Participants who had already been diagnosed with diabetes were more likely to be aware of their hypertension and dyslipidemia. Older participants, men who were more educated, or who were widows or widowers, were at higher risk of prediabetes [9]. Similar results were obtained in Saudi Arabia [10].

The suitability of early diagnosis and treatment of prediabetes is indicated by the results of the study among children [11]. It is shown that children with NAFLD have a higher prevalence of impaired glucose tolerance than children without NAFLD. Central obesity is the factor that is most strongly associated with NAFLD.

II. RESEARCH METHOD

To study the possibility of using survey research methods as screening tests. 1.475 men of Tashkent and Urgench aged from 20 to 69 years were examined. The study was population-based and was therefore carried out using methods recommended by WHO for population-based studies. Glucose tolerance was studied according to the standard method by conducting an oral glucose tolerance test (OGTT) with the determination of fasting glycemia, and 2 hours after taking 75 gr. glucose. Violation of tolerance to glucose detected according to the criteria of the American Diabetes Association [6]: A diagnosis of prediabetes is made if one of the following criteria are met [1]:

- impaired fasting glucose (IFG): Fasting Plasma Glucose (FPG) 100 mg/dL (5.6 mmol/L) to 125 mg/dL (6.9 mmol/L)
- impaired glucose tolerance (IGT): OGTT 2-hour PG 140 mg/dL (7.8 mmol/L) to 199 mg/dL (11.0 mmol/L)

However, among all the survey, regardless of OGTT indicators, a survey was conducted to identify various symptoms characteristic of diabetes mellitus. We studied the presence of symptoms such as a feeling of dry mouth and thirst, an increased amount of fluid intake, the presence of paresthesia, vision impairment. The results of the survey were compared with OGTT indicators. According to the results of OGTT, the examined were divided into four groups: persons with normal glucose tolerance, persons with high fasting glucose, persons with IGT 2 hours after glucose loading, persons who had a combination of IGT, both on an empty stomach and 2 hours after glucose loading.

III. RESULTS AND DISCUSSION

The analysis showed that with prediabetes, there are symptoms such as increased fluid intake (59.6%), dry mouth (47.7%), thirst (44.3%), itching of the skin (29.5%). However, patients with prediabetes experience various sensations characteristic of angiopathy: a burning sensation of the soles (34.2%), numbness of the toes (29.0%), paresthesia (30.7%). Patients with prediabetes complained of blurred vision, which is not responsive or responds poorly to the correction of optical lenses (50.1%). In patients with the studied symptoms of prediabetes occurred in 76.2%, and without these symptoms - 23.8%. It is important to note that the frequency of prediabetes is closely related to the prescription of the symptoms observed. Thus, with the duration of symptoms up to 2 years, the incidence of prediabetes is 31.5%, among persons with these symptoms from 3 to 4 years -

45.4%, with the prescription of symptoms from 5 to 6 years – 55.8%, and with the prescription of these symptoms from 7 years and above - 59.6%.

It should be noted that all the studied symptoms, as well as their prescription, are more pronounced in hyperglycemia 2 hours after glucose loading.

Along with the above symptoms, the frequency of prediabetes was associated with the number of receiving food. So among people who eat mainly one time a day, the frequency of prediabetes was 52.3%, among those who eat two times a day - 36.9%, with three meals a day - 30.5%, among people who eat 4-5 times a day - 26.4%. These data indicate that fractional, uniform distribution of food during the day contributes to the preservation of carbohydrate tolerance.

It should be noted that the presence of any one of the above symptoms in itself can not serve as a reliable diagnostic criterion for prediabetes since these symptoms occur in other pathological conditions. For example, diseases such as stomatitis, psychogenic polydipsia, liver, kidney, and other endocrine disorders can also contribute to the occurrence of these symptoms. However, dry mouth and thirst that occur and increase after eating are more characteristic of insulin deficiency.

Patients with prediabetes often have symptoms of angiopathy. Patients who feel burning soles often note that even in winter, they do not cover the lower part of the legs with a blanket. Visual impairment is a widespread phenomenon. However, usually, the correction of optical lenses can blurred vision mainly due to the damage of the vascular system of the eye. That is why the correction of optical lenses in these patients is often ineffective or ineffective. Itching of the skin can be a manifestation of liver diseases, kidney, allergic conditions, etc. However, if the patient went to the doctor and the treatment was ineffective or ineffective, and if the skin itch appears and disappears for no apparent reason, then in such cases you can think about prediabetes.

III. CONCLUSION

When conducting mass examinations of the population at the first stage of the study, a survey method should be used, covering the issues of clinical manifestations of prediabetes. A targeted survey, taking into account the characteristics of individual prediabetes symptoms, allows identifying a group of high risk. Then, in these risk groups, additional research should be conducted to diagnose prediabetes or diabetes. The survey method to identify some of the main clinical symptoms of prediabetes and diabetes is very simple, low-cost. It takes a few minutes. The survey method can be used as a primary screening diagnostic screening test to detect both diabetes and prediabetes.

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