

ASSESSMENT OF THE RISK OF DEVELOPING DIABETES MELLITUS IN MEN WITH DIFFERENT LEVELS OF CARDIOVASCULAR RISK

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Relevance of the topic

At the beginning of the third millennium, the problem of cardiovascular diseases (CVD) came to the forefront in terms of relevance among all causes of morbidity and mortality. According to forecasts of the World Health Organization (WHO), by 2030 about 23.6 million people will die from CVD, mainly from heart disease and stroke, which are the main causes of death among people of working age. Heart disease, like many other chronic non-communicable diseases, develops slowly and "unnoticed". In the structure of mortality of the adult population, the share of complications of CVD (ischemic heart disease (IHD) and stroke) today is 40-60%. There is a tendency for these diseases to "rejuvenate" - there are frequent cases when myocardial infarction (MI) is observed in 2-5-year-old people, which is the most important medical and social problem. One of the important reasons for the increase in the prevalence of CVD is the presence of a number of concomitant diseases. In particular, an increased risk of developing coronary heart disease is associated with the presence of metabolic disorders and diabetes mellitus (DM) in patients. Modern studies have established common mechanisms of the pathological process of DM and CVD formation, which allows us to consider DM as an endocrinological equivalent of coronary heart disease. Interest in early disorders of carbohydrate metabolism has increased significantly in recent years. Prediabetes is an intermediate stage between normal glucose tolerance and type 2 DM. The annual conversion of impaired glucose tolerance (IGT) to type 2 DM, according to prospective studies, is 4-8%. The development of algorithms and accessible tools for identifying the risk of developing DM in individuals with cardiovascular risk is an urgent problem in modern cardiology.

The purpose of the study. To assess the risk of developing type 2 DM in men with different risks of cardiovascular complications, as well as to identify the relationship between a high level of risk of developing type 2 DM and the main factors of cardiovascular risk in cardiology practice.

Objectives of the study. To identify patients with a high risk of developing type 2 diabetes using the FINDRISC questionnaire among individuals with different levels of cardiovascular risk according to the SCORE scale. To screen individuals with different levels of cardiovascular risk using the glucose tolerance test (GTT) in order to identify early disorders

of carbohydrate metabolism. To study carbohydrate metabolism indicators, including insulin resistance (IR) and GTT, in individuals with a high risk of developing type 2 diabetes. Analysis of the main risk factors (RF): arterial hypertension (AH), tachycardia, hypercholesterolemia (hyperCH), hypertriglyceridemia (hyperTG), low high-density lipoprotein cholesterol (HDL-C), abdominal obesity (AO), obesity, high-sensitivity C-reactive protein (hsCRP), hyperuricemia, among individuals with different levels of risk of developing diabetes.

Research results. For the first time cardiology practice, the FINDRISC questionnaire for predicting type 2 diabetes was tested among individuals with different levels of risk of cardiovascular complications. The study showed high efficiency of the FINDRISC questionnaire as a screening method for further verification of the diagnosis in men with different cardiovascular risks. Markers (AH, hyperCH, hyperTG, IR) associated with a high risk of developing diabetes among individuals with different levels of cardiovascular risk were identified. In men with a high and very high risk of developing diabetes according to the RIMZh18S questionnaire, mandatory additional measures to change lifestyle and/or timely administration of hypoglycemic therapy are recommended. The diagnostic efficiency of TSH and the HOMA index in men with different cardiovascular risks is shown. As a result of the study, algorithms were developed for identifying patients with a high risk of developing diabetes in general therapeutic practice. Type 2 diabetes mellitus, which is the most important cause of disability and mortality worldwide, is the most important risk factor (RF) for coronary heart disease (CHD) and other cardiovascular diseases (CVD). Vascular complications in type 2 diabetes develop earlier than in other non-infectious pathologies and significantly affect the long-term prognosis of the disease. Many authors classify type 2 diabetes as a metabolic and vascular pathology. The American Heart Association recommends considering type 2 diabetes a cardiovascular disease. Large vessel lesions in diabetes mellitus differ from atherosclerotic vascular changes in the general population in that they develop earlier, have no gender differences, and are more often localized in the distal parts of the vascular bed. Many studies have shown that the nature of microvascular damage in type 2 diabetes differs significantly from that in other diseases. Doctors traditionally consider vascular disorders to be late complications of long-term type 2 diabetes. However, morphological changes in muscle biopsies, shown by electron microscopic studies, revealed changes in the capillary basement membranes characteristic of diabetic angiopathies in individuals with prediabetes (PD) before the clinical onset of the disease.

Currently, there are already data on vascular endothelial damage characteristic of type 2 diabetes before the clinical manifestation of the disease. This circumstance increases the relevance of early detection of NMD. The results of screening studies have shown that IGT and type 2 diabetes are much more common than they are diagnosed. The probability of

transition from PD to type 2 diabetes significantly increases in obese patients or overweight individuals. Studies by F. Kelestimur et al., which included 1774 people, showed that 4% of them already suffered from type 2 diabetes, in 2.9% DM 2 was diagnosed for the first time, and prediabetes was detected in 9% of cases. It has been shown that every year more than 10% of IGT develops into type 2 diabetes, and if fasting hyperglycemia is combined with IGT, then the number of patients with type 2 diabetes increases to 38-65% over 5 years. A multicenter study, Study To Prevent Non Insulin Dependent Diabetes Mellitus, conducted in Canada and Western Europe on the use of an alpha-glucosidase inhibitor drug to prevent type 2 diabetes in patients with PD, was also very effective in preventing CVD: the risk of myocardial infarction decreased by 91%, and the likelihood of developing other cardiovascular events decreased by 49%. The incidence of type 2 diabetes among people with IGT decreased by 25% over 3 years of observation. Other ways to prevent the development of type 2 diabetes and its vascular complications are being actively studied. In 2021, the ORIGIN scientific study was continued to study the prognosis of vascular complications with early insulin treatment of people with PD. Disorders of carbohydrate and lipid metabolism are the most important components of metabolic syndrome. In Europeans, IGT is often combined with obesity, arterial hypertension (AH), dyslipoproteinemia, which is confirmed by the results of many studies. This connection is pathogenetically determined. In 2017, R. Avogaro noted a fairly common combination of type 2 diabetes with hyperlipidemia and moderate obesity. He was the first to suggest that this is a holistic pathology - metabolic syndrome (MS). J. Kaplan, who noted a frequent combination of hyperinsulinemia, abdominal obesity, IGT, AH, designated this condition as "insulin resistance syndrome" or "deadly quartet". G. Reaven described "Syndrome X", or MC, which included IR, increased levels of insulinemia and low-density lipoprotein cholesterol (LDL-C), decreased levels of high-density lipoprotein cholesterol (HDL-C), HNL, and hypertension. He also determined the enormous significance of the disorders that make up MC in the development and progression of coronary heart disease. G. Reaven tried to determine the cause of the relationship between these changes, suggesting that the pathogenetic basis of MC is IR, which is compensated by varying degrees of hyperinsulinemia. Other researchers have also studied the problem of MC, determining the enormous role of its components in the development of type 2 diabetes. In the literature, one can find a large number of definitions of a set of metabolic changes, united by IR, accompanied by a compensatory increase in the level of insulinemia: "metabolic tri-syndrome", "polymetabolic syndrome", "syndrome of plenty", "metabolic syndrome", "syndrome X", "lethal quartet", "hormonal metabolic syndrome", "insulin resistance syndrome". Later, the terms "lethal sextet", "metabolic vascular syndrome" were registered.

Practical significance. Based on the data obtained, recommendations were developed for identifying metabolic RFs during the medical examination of the working-age population. Patients aged 30 years and older with excess body weight (BW) and/or AO, with low physical activity (LPA), hypertension, dyslipidemia, high and very high cardiovascular risk according to the 8SOIE scale are recommended to include a questionnaire using the RIMZh18S questionnaire in the medical examination program and undergo screening to identify early carbohydrate metabolism disorders. Recommendations have been formulated for primary care physicians on the widespread use questionnaire in assessing the overall risk of developing type 2 diabetes in order to select prevention and treatment options.

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