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METABOLIC SYNDROME: SOME RESULTS AND PROSPECTS FOR SOLVING THE PROBLEM

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Abstract. The article presents modern literature data on the etiology, pathogenesis and some principles of treatment of metabolic syndrome. The concept of "metabolic syndrome" includes a set of syndromes (obesity, arterial hypertension, insulin resistance, dyslipidemia), each of which can both trigger and maintain a vicious circle of the symptom complex. Treatment of metabolic syndrome involves, in addition to diet and drug therapy, the use of restorative medicine methods.
Keywords: metabolic syndrome, method, cardiovascular diseases.

INTRODUCTION

Among the causes of morbidity and mortality in the population, the main ones today are cardiovascular diseases (CVD) [1]. A significant role in this was played by the high prevalence of metabolic syndrome (MS) and its unfavorable impact on the course and prognosis of patients with CVD. Lifestyle changes associated with limiting physical activity, increasing the calorie content of foods and a steady increase in emotional stress loads potentiate the main risk factors for CVD, which are a "negative asset of progress", namely increased blood pressure (BP), dyslipidemia , diabetes mellitus (DM) and obesity. The interrelated combination of these pathologies is designated by the single term "metabolic syndrome X" [2].

MATERIALS AND METHODS

The main idea of creating the MS concept is to identify a population of patients with high cardiovascular risk, in whom preventive measures, including lifestyle modification and the use of adequate medications, can significantly affect basic health indicators. The identification of patients with MS is also of great clinical importance, since, on the one hand, this condition is reversible, i.e. with appropriate treatment, it is possible to achieve disappearance or at least a decrease in the severity of its main manifestations; on the other hand, it precedes the emergence of pathologies such as type 2 diabetes mellitus (DM) and atherosclerosis, which is inextricably linked with an increase in mortality in the population. According to the criteria of MS components, patients are divided into groups: with complete MS (a combination of hypertension, dyslipidemia, obesity, NIDDM) and with incomplete MS, which does not include one of the above components [3].

RESULTS AND DISCUSSION

The structure of visceral adipose tissue is characterized by morphological and functional features. Intra-abdominal adipocytes have a higher density of corticosteroid, androgen and β-adrenergic receptors and a relatively lower density of insulin receptors and α2-adrenergic receptors. This determines the high sensitivity of visceral adipose tissue to the lipolytic action of catecholamines and low sensitivity to the antilipolytic action of insulin [4]. Intense lipolysis in intra-abdominal adipocytes leads to the release of large amounts of free fatty acids, which enter the portal vein into the liver and then into the systemic circulation. The liver is exposed to a powerful and constant effect of free fatty acids, which leads to a number of metabolic disorders, insulin resistance develops, and then systemic hyperinsulinemia [2].

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Free fatty acids are utilized in the liver in two ways: either they activate gluconeogenesis, thereby promoting an increase in glucose production and a decrease in the activity of phosphatidylinositol 3-kinase of the insulin receptor, disrupting the transport of glucose into cells, which leads to the development of hyperglycemia (effect of lipotoxicity); or are used for the synthesis of triglycerides (TG) [3]. The distribution of adipose tissue is assessed by the ratio of the patient's waist circumference to hip circumference (WC/HC). In the presence of abdominal obesity, this indicator exceeds 1.0 in men and 0.8 in women. The distribution of adipose tissue in the human body is subject to genetic control [3].

Insulin resistance, which occurs due to excessive accumulation of adipose tissue, is a link between obesity, impaired glucose tolerance, arterial hypertension and dyslipidemia. It should be pointed out that a predisposition to IR is a historically established mechanism of adaptation of the human body to changes in external conditions to maintain energy balance and the normal functioning of all organs and systems. To explain this genetic predisposition to IR, J. Neel in 1962 put forward the theory of "conserved genotype." According to this theory, the human body, in times of well-being and nutritional abundance, accumulated fats and carbohydrates, and during periods of food shortage it maintained normoglycemia and spent energy more economically by reducing the level of glucose utilization in muscle tissue and increasing gluconeo- and lipogenesis. Thus, IR contributed to human survival during periods of famine. IR maintains the body in a state between health and disease for a certain time. However, at present, under conditions of physical inactivity and chronic overeating of fats, as well as the presence of other unfavorable factors, this mechanism becomes pathological and leads to the development of type 2 diabetes, hypertension, and atherosclerosis [3].

The primary and pathogenetically justified measures are those aimed at reducing body weight and normalizing metabolic disorders [4]. The effect of reducing body weight on blood pressure levels has been demonstrated in a number of large multicenter studies, such as TONR-1, TAIM, TOMHS, XENDOS.

The antihypertensive drugs of choice in these patients are angiotensin-converting enzyme (ACE) inhibitors.

CONCLUSION

The most important therapeutic measure to prevent thrombotic complications of MS is the prescription of aspirin (HOT, USPHS, ETDRS), which significantly reduces the risk of developing major cardiovascular complications.

For the prevention and treatment of MS, along with quitting smoking and alcohol, increasing physical activity, a rational and balanced diet, spa treatment and other methods of non-drug therapy are of great importance.

The full implementation of all of the above therapeutic approaches can significantly affect the quality of life of patients and prevent the occurrence of life-threatening cardiovascular complications.

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