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WOMEN METABOLIC DISORDERS DEPENDING ON THE DURATION OF MENOPAUSE

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Abstract. *In recent years, much attention has been paid to the health of women in the climacteric period of life, since this period makes up almost a third of women. In this regard, the period of not only this health of a woman, but also her ability to work, the possibility of implementing various functions depends on the nature and manifestation. The study involved 75 women aged 45 to 60 years, who were divided into groups depending on the duration of menopause. According to the results, it was revealed that heredity plays a role in the development of society. Also, the longer the duration of menopause, the more pronounced the signs of metabolic diseases: obesity, increased cholesterol, triglycerides, lipoproteins, low decline and lipoproteins, very low decline, decreased lipoprotein levels, high probability, insulin, development of insulin resistance, vascular complications, diabetes mellitus.*

Keywords: *postmenopause, violation of protection against exposure, lipid metabolism, insulin resistance.*

Relevance. In recent years, much attention has been paid to women's health during the menopausal period, since this period makes up almost a third of a woman's life. In connection with this fact, not only the woman’s health, but also her ability to work, the ability to perform various social functions depend on the nature and course of this period. Estrogen deficiency leads to the development of various complications, therefore, it is important to predict the likelihood of a functional disorder of various organs and systems during menopause, and to perform timely diagnosis and treatment. Metabolic disorders are some of the menopausal complications. Metabolic syndrome (MS) is a complex of interrelated disorders of carbohydrate and lipid metabolism, as well as mechanisms for regulating blood pressure (BP) and endothelial function, due to the reduced sensitivity of body tissues to insulin -insulin resistance (IR). Increased synthesis of free fatty acids in the liver proves that insulin resistance leads to increased synthesis of triglycerides (TG) and very low density lipoproteins (VLDL) in hepatocytes. In the case of insulin resistance, the activity of lipoproteidlipase, which is under the control of insulin, decreases. In this case, dyslipidemia associated with visceral obesity occurs: concentrations of VLDL and TG increase, high-density lipoproteins (HDL) decrease, and the number of low-density lipoproteins (LDL) increases. From this it follows that obesity and insulin resistance contribute to the development of lipid profile disorders, and together with hyperglycemia and hypertension they lead to early and rapid development of atherosclerosis in patients with impaired carbohydrate metabolism and visceral obesity. The effectiveness of the treatment of metabolic syndrome, as you know, depends on the duration of its development. The best treatment results can be obtained at the initial stage of the development of pathology, when excess weight is not considered an aesthetic problem, but serves as a signal for the start of certain actions. Therefore, timely diagnosis and correction of metabolic disorders will help prevent the development of cardiovascular diseases and diabetes.

Aim. To study disorders of metabolism in women depending on the duration of menopause

Materials and methods. The study involved 75 women aged 45 to 60 years, which were divided into groups depending on the duration of menopause. The first group consisted of 25 patients with menopause duration up to 2 years, the second - 25 patients with menopause duration from 2 to 7 years, the third group - 25 women with menopause more than 7 years. The control group included 20 women during the menopausal period with no signs of metabolic disorders. None of the women received hormone replacement therapy. Obstetric-gynecological and hereditary history, age of onset of menopause, its duration and course of treatment were studied in all groups of patients. Using the anthropometric method, the following parameters were evaluated: body mass index (BMI), waist circumference (OT), ratio from OT to the circumference of the hips (OT / OB). Metabolic changes in lipids were evaluated on the basis of a biochemical study of total cholesterol (OX), TG, LDL, HDL, VLDL. Insulin resistance was assessed using the HOMA serum index (HOMA-IR - Homeostasis Model Assessment of Insulin Resistanc) - the ratio of glucose to insulin. An index is considered within the normal range, if it does not exceed 2.7 times the limit value. In addition, serum C-reactive protein levels were also evaluated, blood pressure monitored, and electrocardiogram (ECG) results recorded.

Results and discussion. The examined groups did not statistically differ in age, time of the onset of menstruation, the number of births and abortions ($p > 0.05$). Evaluation of the hereditary history revealed the main clinical signs pathognomonic for the metabolic syndrome in close relatives (type 2 diabetes mellitus in 32% of cases, arterial hypertension in 52%, and early coronary heart disease in 36%). In the control group, only 1 case (5%) revealed no arterial hypertension. The main complaints presented by the examined women quickly gained weight after the onset of menopause: hair growth in atypical places, high blood pressure, rough, hyperpigmented skin on the elbows, under the mammary glands, in the axillary areas (the so-called “black acanthosis”) in 2 patients (8%) of the II group, in 10 patients (40%) - of the II group, and in the I and control groups these signs were not diagnosed. In women of group I, the average body weight increased by 2.8 kg, in group II - by 3.6 kg during the first two years of postmenopause. 7 years later, after menopause, the weight gain in group III was 7.6 kg, adipose tissue was mainly distributed in the waist area. In the control group, body weight became, on average, 2.2 kg more within 7 years after menopause. In patients from group I, during two years of menopause, OT increased, on average, by 5.6 cm, after five years (group II) - by 7.8 cm, after seven years (group III) - by 9.2 cm. The OT / OB index increased to 0.95 in 27 (36%) of the women examined, in 34 (45.32%) patients it was 1.01. At the same time, 60 (80%) women of reproductive age had a proportional figure in the female type and did not suffer from excess weight. Examination of patients revealed significant changes in the lipid spectrum in blood plasma, characterized by increased total cholesterol, TG, LDL, VLDL and a decrease in HDL. 66.7% of the examined patients showed a decrease in HDL below 1.29 mmol / L and a TG above 1.69 mmol / L. These changes were more pronounced in patients from group III, while in group I these values varied at the upper limit of the norm ($p > 0.05$). Thus, the total cholesterol level rises with the duration of menopause: group I - 4.7 ± 0.5 mmol / l, group II - 6.2 ± 0.5 mmol / l, group II - 7.2 ± 0.2 mmol / l The level of triglycerides also increases with the duration of menopause: group I - 1.7 ± 0.2 mmol / l, group II - 3.1 ± 0.3 mmol / l, group III - 3.5 ± 0.2 mmol / l. Excessive synthesis of triglycerides is a violation of carbohydrate metabolism, together with gluconeogenesis, this process is a method of bioutilization of free fatty acids. Most scientists believe that the most typical sign of

dyslipidemia associated with IR is an increase in TG and a decrease in HDL, and these changes are proposed to be used as markers. A fundamentally important pathogenic mechanism of IR is a violation of the regulation of lipid metabolism, as a means of increased release of free fatty acids into adipose tissue. IR in this category of women is confirmed by the value of the HOMA index (table).

Table 1.

NOMA index depending on the duration of menopause

Studied Groups	Normal Values	HOMA Index
Control group	20	20 2.6 ± 0.2
I group	25	25 2.7 ± 0.2
II group	25	25 3.4 ± 0.5
III group	25	3.8 ± 0.5

When examining 8 (32%) patients of group III, an increase in the basal level of C-reactive protein (4.3 ± 0.6 mg / l) was found, which is a risk factor for vascular complications. This indicator was higher in 4 (16%) women of group II and in 1 (2.5%) - group I ($p < 0.05$). An elevated level of C-reactive backing was found in 80% of obese women.

This suggests a direct correlation between the obesity factor and elevated levels of C-reactive protein. In addition, after examination, type 2 diabetes mellitus was detected in 8 (32%) patients from group III. Fasting glucose was at the upper limit of normal among patients of groups II and I. Arterial hypertension was found in 24% of women of group II and 48% of group III. ECG results indicate characteristic signs of hypertrophy of the left cardiac cavities.

Conclusion. 1. Heredity plays a role in the development of metabolic disorders. 2. The longer the duration of menopause, the more pronounced signs of metabolic disorders are detected: obesity, increased levels of OX, TG, LDL and VLDL, decreased levels of HDL, insulin, the development of IR, vascular complications, diabetes. The prospect of further research, timely diagnosis and correction of metabolic disorders will help reduce the risk of cardiovascular disorders and diabetes in women during postmenopause and improve their quality of life.

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