



DEFINITION OF METABOLIC SYNDROME MS AND RISK FACTORS

Botirova Mahira Ravshanovna

Assistant of the Department of Medicine,
branch of KFU in Jizzakh, Uzbekistan

botirovamohira955@gmail.com

<https://doi.org/10.5281/zenodo.10682578>

ARTICLE INFO

Received: 14th February 2024

Accepted: 19th February 2024

Online: 20th February 2024

KEYWORDS

Postmenopausal status, behavioral factors, sedentary lifestyle, carbohydrate diet, clinical importance, timely treatment, disappearance, manifestations.

ABSTRACT

Obesity, as recognized by the World Health Organization (WHO), is considered a non-infectious epidemic of the present time due to its widespread prevalence among the population, high risk of developing cardiovascular diseases (CVD), early disability of patients and premature mortality. This article discusses about basic criteria for diagnosing metabolic syndrome, modern methods of treatment and prevention of the disease.

According to WHO, ~30% of the world's inhabitants are overweight, of which 16.8% are women and 14.9% are men. The number of obese people progressively increases by 10% every 10 years [1].

Obese individuals are 50% more likely to develop arterial hypertension (HTN) than individuals with normal body weight (BW). According to the Framingham study, for every 4.5 kg of excess weight, systolic blood pressure (SBP) increases by 4.4 mmHg. in men and by 4.2 mm Hg. among women [2]. A number of studies have revealed a direct proportional relationship between MT and overall mortality. Obesity 1 tbsp. increases the risk of developing type 2 diabetes by 3 times, stage II. -- 5 times and III st. -- 10 times.

Of particular danger is the central type of obesity with predominant fat deposition in the abdominal region. Frequent combination of visceral obesity, disorders of carbohydrate and lipid metabolism, breathing disorders during sleep,

AH and the presence of a close pathogenetic connection between them served as the basis for distinguishing them into an independent syndrome - metabolic.

WHO experts assessed the situation regarding the prevalence of MS as follows: "We are facing a new pandemic of the 21st century, covering industrialized countries. This could be a demographic disaster for developing countries [3]. The prevalence of metabolic syndrome (MS) is 2 times higher than the prevalence of diabetes mellitus (DM), and its growth rate is expected to increase by 50% in the next 25 years.

A meta-analysis of large-scale studies showed that in the adult population, MS is diagnosed from 10% in China to 24% in the USA. Most studies have identified general patterns that play an important role in the development of MS, such as age, postmenopausal status in women, behavioral factors such as a sedentary lifestyle and the predominance of a



carbohydrate diet, and socioeconomic status. Recently, the results of the first Russian study were obtained, conducted on a random sample of the adult population ($n = 1800$) in the city of Cheboksary (Chuvash Republic, Volga Federal District) [4]. It turned out that 20.6% of people aged 30-69 years have MS; in women it occurs 2.4 times more often; With age, the number of patients increases. In the age range of 30-39 years, MS was found in 1%, in 40-49 years in 3.6%, in 50-59 years in 9%, 60-69 years in 7% of respondents.

Isolation of MS is of great clinical importance, since on the one hand this condition is reversible; with appropriate timely treatment, it is possible to achieve the disappearance or at least a decrease in the severity of its main manifestations, and on the other hand, it precedes the emergence of diseases such as type 2 diabetes mellitus (DM-2) and atherosclerosis - diseases that currently serve the main causes of increased mortality in the population.

For the first time in Russia, an algorithm and criteria for diagnosing MS were proposed for institutions at various levels: from primary care (clinics, outpatient clinics) to specialized clinics in research institutes and centers with high material and technical equipment, as well as an algorithm for complex treatment of MS.

1. Definition of metabolic syndrome and risk factors

MS is characterized by an increase in visceral fat mass, a decrease in the sensitivity of peripheral tissues to insulin and GI, which cause disturbances in carbohydrate, lipid, purine metabolism and hypertension [5].

Factors influencing the development of MS:

Genetic predisposition: The formation of MS is genetically determined. There is a known gene for insulin receptors, which is localized on the 19th chromosome. More than 50 mutations of this gene have been described. There are many studies of families, extended pedigrees, and twin studies of relatives with T2DM. The results of these studies have led to the firm belief that insulin resistance (IR) may be genetically determined. Hyperinsulinemia (HI) and insulin resistance (IR) were found in the descendants of relatives with a history of T2DM [6].

Excessive nutrition: The most important environmental factors contributing to the development of MS are excess consumption of fatty foods and low physical activity (LPA). The accumulation of fat mass in the body is based on overeating animal fats containing saturated fatty acids (FA). If the mass of fat consumed exceeds the body's ability to oxidize it, then obesity develops and progresses. Saturated FAs, supplied in excess from food, cause structural changes in the phospholipids of cell membranes and disruption of the expression of genes that control the conduction of the insulin signal into the cell. Fats are higher in calories than proteins and carbohydrates; 1 g of fat contains 9 kcal, while proteins and carbohydrates contain 4 kcal each. Therefore, when consuming fats, the body receives 2 times more calories for the same amount of food than when consuming proteins and carbohydrates [7].

An important factor linking IR with AO, dyslipoproteinemia (DLP), disorders of carbohydrate and purine metabolism and hypertension is GI.

For a certain time, GI compensates for carbohydrate metabolism and maintains normoglycemia, which can also mask signs of lipid metabolism disorders. This explains, in some cases, the presence of not all of the listed additional symptoms in patients. Assessing insulin sensitivity and its level is possible only in well-equipped clinics. The research results have



established that these indicators are highly reliably interrelated with the content of TG, HDL cholesterol, LDL cholesterol, uric acid and blood pressure. Hyperinsulinemia can be considered a predictor of arterial hypertension [8].

Arterial hypertension may not be detected in the early stages of metabolic syndrome; the absence of arterial hypertension does not exclude the presence of metabolic syndrome in a patient with abdominal obesity.

The absence of any additional symptoms in patients with MS does not give grounds to interpret it as incomplete, or, conversely, the presence of all of these symptoms cannot be regarded as complete MS. These formulations do not have any pathogenetic or clinical basis. The definitions of compensated and decompensated MS are also unacceptable, since they do not carry any semantic load.

If a patient with a typical picture of MS has signs of atherosclerosis or develops DM-2, in such cases it is logical to regard the situation as MS complicated by the development of atherosclerosis or DM [8].

Breathing disorders during sleep can develop as part of MS and be its complication, on the one hand, on the other hand, the Obstructive Nasal Apnea Syndrome (OSA) itself can cause metabolic changes, such as hyperinsulinemia, insulin resistance, impaired glucose tolerance, dyslipidemia and contribute to development of metabolic syndrome.

There is no diagnosis of metabolic syndrome in ICD-10 (WHO, 1998). Only essential hypertension (hypertension) - code I 10 and obesity - code E 66.9 are classified. The diagnosis may have either double coding (I 10 and E 66.9); Depending on the prevalence, one or another code is placed in first place. Diagnostic reports describe all components of this symptom complex [9].

Considering that increased blood pressure in MS is a consequence of AO, IR and HI, hypertension is secondary in nature and is symptomatic, except in cases where hypertension occurred before the appearance of signs of MS.

Examples of diagnostic reports

Diagnosis: Obesity I degree. Impaired glucose tolerance. Arterial hypertension 2 degrees, risk 2 (moderate) [10].

Diagnosis: Obesity III degree. Dyslipidemia. Impaired glucose tolerance. Hyperuricemia. Arterial hypertension stage 1, risk 3 (high).

Diagnosis: Obesity II degree. Hypertriglyceridemia. Hyperglycemia on an empty stomach. Hyperuricemia. Arterial hypertension stage 3, risk 4 (very high).

Therapeutic measures in the treatment of patients with MS should be aimed at the main pathogenetic components of MS.

The main goals of treatment for obese patients should be:

- complications (CVC) [11].

The main signs of the pathogenesis of MS and its complications are obesity, IR, impaired carbohydrate metabolism, DLI and hypertension. This symptom complex can occur with a predominance of disturbances of one or another type of metabolism, which ultimately determines the priority areas of therapy in a particular case.

The cornerstone in the treatment of MS is non-drug measures aimed at reducing body weight, changing dietary patterns, giving up bad habits such as smoking and alcohol abuse,



increasing physical activity, i.e., the formation of a so-called healthy lifestyle. The addition of drug treatment methods does not exclude non-drug measures and should take place in parallel [12].

Non-drug treatment is more physiological, accessible and does not require large material costs, but at the same time, significant efforts are required on the part of doctors and the patient himself, since such treatment is associated with the expenditure of additional time. These activities must be carried out for life, because Obesity is a chronic disease.

Non-drug treatment of MS includes dietary interventions and physical exercise, which should result in a decrease in obesity. Reducing body weight and, especially, visceral fat mass helps to correct metabolic disorders (MD), increase tissue sensitivity to insulin and lower blood pressure, significantly reducing and delaying the risk of complications. If non-drug treatment methods are insufficiently effective or if there are certain indications, there is a need for drug or even surgical correction of MT, but these measures should be carried out only against the backdrop of ongoing non-drug interventions. When determining drug treatment tactics for obesity, it is necessary to remember the high degree of cardiovascular risk in patients with MS and take into account the effect of medications on it.

If changes in carbohydrate metabolism in the form of IGT predominate in the patient, there is no sufficient effect from non-drug measures and there is a high risk of developing diabetes or atherosclerosis, the prescription of drugs that affect tissue sensitivity to insulin and peripheral carbohydrate metabolism is indicated [11].

The predominance of DLP in the clinical picture of MS may serve as a basis for prescribing lipid-lowering therapy. Indications for such therapy are determined by the degree of cardiovascular risk and the critical level of key drug indicators. An important condition for treatment aimed at improving carbohydrate and lipid metabolism is achieving target levels of glucose and lipids, which reduces the risk of developing diabetes, atherosclerosis and CVD and increases the life expectancy of patients with MS. Treatment of hypertension refers to the pathogenetic therapy of MS, since it can make a certain contribution to the formation and progression of MS. In this case, it is necessary to take into account the effect of a particular antihypertensive drug on carbohydrate and lipid metabolism. Drugs that have a neutral effect on metabolic processes should be given preference; it is even better if they have the properties of reducing IR and improving the parameters of carbohydrate and lipid metabolism. It is unacceptable to prescribe drugs with a known negative effect on IR and metabolic processes. Another important condition for antihypertensive therapy is achieving target blood pressure levels <140/90 mmHg. (for patients with diabetes < 130/80 mm Hg), since it is precisely when these levels are achieved that the smallest number of cardiovascular events is observed.

References:

1. Belyakov N.A., Seidova G.B., Chubrieva S.Y. and others. Metabolic syndrome in women (pathophysiology and clinic). - SPb.: Publishing house SPbMAPO. 2005.-440s.
2. Dedova I.I., Shestakova M.V. Algorithms for specialized medical care for patients with diabetes mellitus / ed. - Moscow, Medicine., 2007. - 105 p.



3. Dilorom, T., & Matluba, D. (2024). USING INTERNET RESOURCES IN RUSSIAN LESSONS. Conferencea, 32-37.
4. Tasheva, D. (2020, December). THE METHODOLOGY FOR THE DEVELOPMENT OF UNCONVENTIONAL RUSSIAN LANGUAGE LESSONS. In Archive of Conferences (Vol. 11, No. 1, pp. 9-10).
5. Tasheva, D. (2022). METHODS OF USING DIDACTIC MATERIALS TO ENHANCE ACTIVITIES IN THE RUSSIAN LANGUAGE LESSONS. TA'LIM VA RIVOJLANISH TAHLILI ONLAYN ILMIY JURNALI, 2(1), 325-328.
6. Alekseevich, E. N., & Rustamovna, A. D. (2023). CREATION OF TEST TASKS FOR STUDENTS AS A PROGRESSIVE WAY TO CONTROL KNOWLEDGE. Boletin de Literatura Oral-The Literary Journal, 10(1), 2992-3002.
7. Mirgarifanovna, B. R., & Rustamovna, A. D. (2023). THE MOST EFFECTIVE METHODS OF TEACHING RUSSIAN AS A FOREIGN LANGUAGE. Boletin de Literatura Oral-The Literary Journal, 10(1), 2980-2991.
8. Rustamovna, A. D., Mirgarifanovna, B. R., & Alekseevich, E. N. (2023). Linguo-Methodological Model Of Teaching The Russian Language To Labor Migrants On The Basis Of The Author's Online Course" Learning The Russian Language". Boletin De Literatura Oral-The Literary Journal, 10(1), 2967-2979.
9. Abdualieva, D., & Bakhtieva, R. (2023). INCREASING THE EFFECTIVENESS OF SPIRITUAL AND EDUCATIONAL WORK IN EDUCATIONAL INSTITUTIONS: PROBLEMS AND SOLUTIONS. Innovative research in modern education, 1(9), 34-36.
10. Nesterov Yu.A. Guide: Atherosclerosis: diagnosis, treatment, prevention. Rostov-on-Don, Phoenix Publishing House 2007, pp. 163 - 178
11. Nikishova V.N., Frantseva E.Yu., textbook Cardiology, Moscow, Eksmo Publishing House 2008, pp.230 -234
12. Oganov R.G., Mamedov M.N. et al., VNOK, National Clinical Guidelines, Moscow, Medi-Expo Publishing House, 2009, pp.254 -273