L. A. Malysheva, F. A. Zakharova, A. A. Strekalovskaya

AGE AND WOMEN'S HEALTH IN THE PERIMENOPAUSE

ABSTRACT

To study the prevalence of metabolic syndrome (MS) risk factors and the structure of morbidity in women - M.K. Ammosov NEFU workers during premenopause under the annual medical examination of the NEFU employees we questioned and examined 50 women aged 43-70.

The most common pathologies in the examined women break down as follows: arterial hypertension, mammary glands pathology (mastopathy), endocrine system pathology, gynecological disorders. More than 50% of the surveyed women have signs of type 2 metabolic diabetes and cardiovascular diseases. In particular, 51.9% of the women had arterial hypertension.

Keywords: premenopause, metabolic syndrome, body mass index, cardiovascular diseases.

Background

The issue of preserving health at different stages of ontogeny, reducing morbidity and premature mortality, slowing down the aging, ensuring working capacity of women is one of the leading areas in biomedical research [8, 1].

Clinicians are particularly interested in perimenopause, which includes the three phases of menopause: premenopause, menopause, and postmenopause. To date, it is assumed that a variety of clinical manifestations in this period is due to the wide range of endocrine status changes at all levels of the hypothalamic-pituitary-ovarian system associated with involutional processes in ovaries and their decreased hormonal functions. About 60-80% of women have clinical signs of estrogen deficiency [3], which is accompanied by neurovegetative, metabolic and psycho-emotional disorders [9].

It is known that the activity of a university lecturer is characterized by increased psycho-emotional, nervous and long-hours teaching load. They have to work a lot on the computer, which leads to inactivity. All these factors worsen the climacteric syndrome during menopause and contribute to the development of MS and a range of various diseases. In its turn, the metabolic syndrome is a major pathogenetic trigger in the development of cardiovascular diseases and type 2 diabetes mellitus (NIDDM).

Material and methods

The survey aimed to identify activity of metabolic syndrome risk factors and morbidity patterns in NEFU women in the premenopause period. Under the annual health survey of NEFU staff, we questioned and examined 50 women aged 43-70 employed by NEFU (the average age made 56.8 years). The main criterion for random sampling of the women was the perimenopause condition.

Results and discussion

The most common pathologies in the examined women breakdown as follows: arterial hypertension – 51.9%, mammary glands pathology (mastopathy) – 48.1%, endocrine system pathology – 48.1%, gynecological disorders. IHD occurred in 25.9%.

Table 1 presents the morbidity level (%) and patterns.

Anthropometrically, the average height of women was 160.3 cm (ranging from 151 to 170 cm), weight – 75.6 kg (ranging from 50 to 100 kg), BMI – 28.2+5.9. The women in the range of 151-159 cm made 48.1%. The standard BMI was found in 29.2% of the women, overweight women (BMI≥ 25 kg/m²) made 33.3%, obesity (BMI ≥ 30 kg/m²) – in 37.5% (Figure 1).

The distribution of the adipose tissue was assessed by waist-hip ratio. WHR was considered high with the index value ≥ 0.8. High WHR was found in majority of the women with overweight and obesity, which indicates abdominal form of obesity.

According to some researchers, female patients with BMI of more than 24 and WHR of more than 0.76 can be attributed to the group with an increased risk for developing NIDDM [7]. BMI and WHR, along with the data of biochemical studies, serve as clinical methods of the survey, allowing suspecting NIDDM on the early stages, when the disease is manifested by only symptoms of anxiety and depressive state under changing hypoglycemia and hyperglycemia, which is similar to the symptoms of menopause.

Estrogen deficiency, which develops with age, is the cause of a number of cardiovascular diseases. In Russia, the mortality rate from cardiovascular diseases ranks first, well ahead of the risk of dying of breast cancer. The frequency of this disease is increasing especially in postmenopausal women. With the frequency of hypertension in premenopausal women in Moscow at 8.2%, in postmenopausal women this figure rises to 52%. These indicators increase both the risk of ischemic heart disease by 3 times and stroke –by 7 times. The progressive rate of hypertension (HT) in women after 50

Table

Morbidity level and patterns (%) in the women

	Diseases	%
1.	IHD	25.9
2.	Hypertension	51.9
3.	Diabetes mellitus	22.2
4.	Thyroid gland pathology	25.9
5.	Gastrointestinal tract diseases	11.1
6.	Hepatobiliary disorders	22.2
7.	Kidney diseases	7.4
8.	Musculoskeletal and locomotor system disorders	22.2
9.	Mastopathy, mastitus	48.1
10.	Endometritis	25.9
11.	Ovarian cyst	11.1
12.	Endometriosis	7.4
13.	Uterine fibroids	37.0

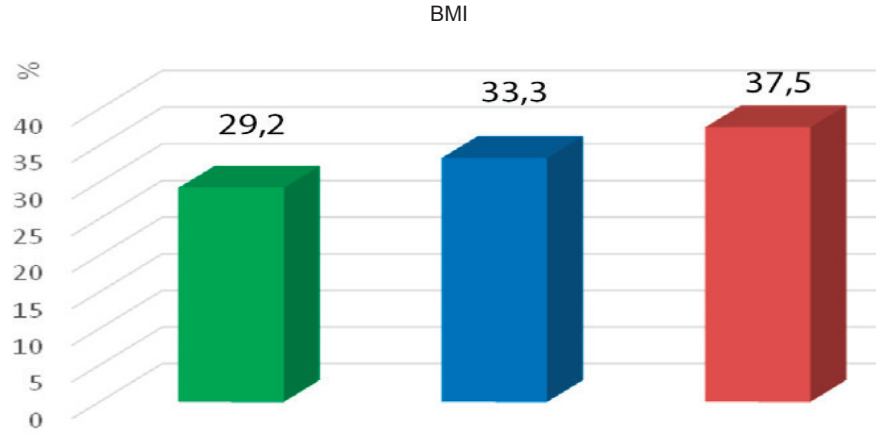

Figure1. BMI distribution (%)

years, with little change in this index in men, suggests a possible role of sex hormone deficiency as an additional risk factor for hypertension [2].

The leading risk factor for developing cardiovascular pathology during perimenopause is metabolic syndrome (X syndrome), which manifests itself in the form of reduced glucose tolerance, dyslipidemia, along with the central type of obesity, hypertension, and plays a leading role in the development of atherogenesis process and violation of fibrinolytic activityof blood.

The etiology and pathogenesis of MS are studied quite well. However, there is still no consensus on the main pathogenetic factors of MS, which causes all the other symptoms. According to some authors (G.V.Poryadin, L.N. Oskolok, 2011), the main pathogenetic factors of MS are insulin resistance (IR) and obesity. The genetic predisposition to the development of IR and obesity is a consequence of the presence of 'thrifty genotype'–a complex of certain genes ensuring survival of an organism under poor nutrition. In modern conditions, when a person moves little and consumes a large amount of high-calorie food, the thrifty genotype contributes to the development of obesity and IR. It is proved that IR directly depends on the degree of obesity and is diagnosed in people who are overweight long before the manifestation of diabetes mellitus. However, 25% of people leading a sedentary lifestyle develop IR regardless the body weight [7].

The results of a population-based study, being conducted over 12 years in women aged 38-60 years, suggest that the risk factors for myocardial infarction are as follow: increasing WHR (waist-hip ratio); increased levels of triglycerides and glucose in serum; and hypertension [4].

The violation of fat metabolism is an important factor that increases the incidence of cardiovascular diseases. The onset of menopause is accompanied by changes in the atherogenic blood lipid profile, namely increased cholesterol in low-density lipoproteins (LDL) and decreased cholesterol in high-density lipoproteins (HDL), as well as increased prevalence of obesity and diabetes mellitus [7]. A number of epidemiological studies have shown that after menopause, 60% of women experience an increase in body weight by 3.5-5 kg, as well as redistribution and accumulation of adipose tissue mainly in the abdominal-visceral area (visceral type of obesity).

The changes in the level of steroid hormones, especially estrogen, are considered the etiological factors of metabolic disorders. The data on some genes involved in the regulation of metabolism serve an evidence of the genetic nature of metabolic disorders. In particular, this refers to the obesity gene (obgen), discovered by Zhang et al. in 1994. This gene encodes the production of leptin, a hormone produced by fat cells, and its receptors. It is believed that there is an interaction between the hypothalamus-pituitary-ovarian system and leptin, which acts as a bridge, adjusting food intake and being an affective saturation signal for the hypothalamic centers that regulate metabolism. Another important factor, potentially underlying the genetic nature of obesity, is the reduced level of adrenal androgens, which possess anti-diabetic and anti-sclerotic properties. Moreover, estrogens have an effect on catecholamine secretion and accumulation, as well as on receptor activity thereon in the CNS. On the local level, catecholamines regulate lipolysis by their receptors in fat tissue.

Women with android and visceral obesity have an increased risk of developing such pathological conditions as impaired glucose tolerance and non-insulin dependent type II diabetes (NIDDM).

In the recent years, numerous studies have been focused on non-insulin dependent type II diabetes (NIDDM), under which insulin resistance (IR) develops. The analysis of a number of indicators characterizing the features of metabolic disorders shows that female patients with BMI greater than 24 and WHR of more than 0.76 can be attributed to the group with an increased risk for developing NIDDM [5].

Conclusion

The main symptoms of MS in women during menopause are as follows: high body mass index, obesity, arterial hypertension and insulin resistance.

According to the results of our study, over 50% of the surveyed women have symptoms of metabolic syndrome and can be attributed to the group with an increased risk for developing NIDDM and cardiovascular diseases. In particular, 51.9% of the women had arterial hypertension.

Recommendations

As obesity and IR are the main causes of MS pathogenesis, in order to prevent their occurrence and progression, it is necessary to follow a straight lifestyle: eliminate excessive consumption of fats and fast-digesting carbohydrates, do regular exercise, minimize stress, avoid alcohol and tobacco. When the first symptoms of MS appear, it is necessary to start the treatment of obesity, hyperglycemia, arterial hypertension, and dyslipidemia.

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The authors

10. Malysheva Larisa Afanas'evna, PhD, docent, MI NEFU, Yakutsk, Sakha (Yakutia) Republic, Russia, e-mail: mallaaf@mail.ru; Zakharova Fedora Appolonovna, MD, Prof., MI NEFU, Yakutsk, Sakha (Yakutia) Republic, Russia, e-mail: patfiz63@mail.ru; Strekalovskaya Alena Anatol'evna, PhD, docent, MI NEFU, Yakutsk, Sakha (Yakutia) Republic, Russia, e-mail: a_strekalovskaya@mail.ru.

Sevostyanova E.V., Mitrofanov I.M., Nikolaev Yu.A.

IMPACT OF COMORBIDITY ON METEOSENSITIVITY IN HYPERTENSIVE RESIDENTS OF THE REPUBLIC SAKHA (YAKUTIA)

ABSTRACT

Purpose. To study the correlation between severity of comorbidity and pathological meteosensitivity in the residents of the North with hypertension, as well as to evaluate some psychophysiological and biorhythmological factors that determine this correlation.

Materials and methods. 347 patients with hypertension - alien inhabitants of the North, men and women in the age - 20-65 years, examined and treated at the Clinic of the FSBSO Scientific Center Experimental and Clinical Medicine (Novosibirsk), residing in the North (the Republic of Sakha, Yakutia) were investigated. The method used was the collection of clinical data and evaluation of pathological disorders of the major functional systems of an organism, phychophysiological parameters, as well as the severity of pathological meteosensitivity using the original computer system of screening assessment of disadaptive, meteopathic and pathological conditions «SCREENMED».

Results. We described the most common pathological disorders at hypertension in the North: disorders of the endocrine system and metabolism; disorders of the sensory organs; of the central and peripheral nervous system; of liver. The association between the severity degree of comorbidity and the level of pathological meteosensitivity ($r = 0.41$, $p < 0.05$) was found. The growth of cognitive disorders, disorders of sensory-motor functions, attention and desynchronosis with the increasing degree of comorbidity was revealed.

Conclusion. The findings indicate that hypertension in alien inhabitants of the North is developing against the background of a pronounced degree of comorbidity. The correlation between severity of comorbidity at hypertension in the North and the level of pathological meteosensitivity, which is an important risk factor for hypertension in extreme environmental conditions is traced.

Keywords: comorbidity, North, hypertension, meteosensitivity, psychophysiological functions.

Hypertension is a major health and social problem in the world, representing the leading risk factor for cardiovascular morbidity and mortality [9, 10]. The greatest significance of the problem of prevention and treatment of hypertension acquires in the northern regions of Russia, which occupy nearly two-thirds of the country where two-thirds of its resource potential is concentrated [2]. It is in high latitudes where there are the highest morbidity and mortality rates from hypertension and pronounced features of the pathogenesis and course, associated with a reduction in human organism adaptive resistance to extreme weather and heliogeophysical factors [4, 2, 5].

Recently the issues of associated diseases, which are considered in the term of comorbidity, are becoming increasingly important in the internal medicine clinic. Comorbidity is defined as a combination of two and/or more syndromes or diseases, pathogenetically interconnected or overlapping in time in the same patient, regardless of the activity of each [1].Among those persons with comorbidity higher mortality rates, higher risk of hospitalization, lower quality of life and reduced functional possibilities are registered [1]. Of particular importance in the formation of co-morbidity are disorders of the cardiovascular system, which are not only naturally, drawn up in the form of cardiac pathology, but also determine the further development of diseases (disorders, pathology) of other physiological systems, since it is the cardiovascular system that provides normal activity of all other systems of an organism. At present, the study of comorbidity prevalence in the middle and high latitudes, depending on gender, age and socio-economic characteristics is actively carried out [6]. However, the questions of relationship between comorbidity in hypertension and disorders of human adaptation to the specific environmental conditions of the North remain unexplored.

Previously, it has been found that the most important factor in the development of hypertension in the North is an increased and / or pathologically changed meteosensitivity (pathological meteosensitivity) [8]. Pathological meteosensitivity is one of the most important manifestations of the human organism disadaptation to the natural conditions [3, 11] and is defined as the organism's ability to respond to changes in climatic, meteorological and heliogeophysical factors in the form of development of pathological meteopatic reactions [3]. Despite of its