ASSESSMENT OF VASCULAR AGE IN PATIENTS WITH METABOLIC SYNDROME

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Cardiovascular diseases (CVDs) are the leading cause of death and one of the leading causes of death worldwide; the risk of developing atherosclerotic CVDs in later life in a 50-year-old person is on average 52% for men and 39% for women, with large variations depending on the expression of risk factors [2]. Assessment of individual cardiovascular risk is useful for selecting preventive treatment in asymptomatic patients with high risk of CVD [3]. Several algorithms have been proposed to facilitate individual risk assessment in patients. Most risk assessment scales include age, sex, blood pressure, smoking, diabetes, and lipid values. Some recently proposed assessment scales include additional risk factors such as use of antihypertensive therapy, C-reactive protein (CRP), premature CHD in a family history, low socioeconomic status, and glycated hemoglobin (hemoglobin A1c). Obesity is a risk factor for cardiovascular disease, but it is often overlooked because in the short term (within 5-10 years in most risk assessment algorithms) its impact is largely mediated by other risk factors.

In some regions of the world, it is important to develop low-cost risk assessment strategies. Almost all risk assessment scales use selected laboratory indicators as markers.

Gaziano et al. assessed whether the scale without laboratory tests could predict cardiovascular risk as effectively as the scale with laboratory tests. All risk factors were used in the model of the scale without laboratory measures. Freming scale except for high-density lipoprotein and cholesterol levels, which were replaced by body mass index. The authors showed that the scale without the inclusion of laboratory indices is almost indistinguishable in the accuracy of CVD risk classification. Therefore, the use of models that do not include laboratory data should be considered for risk assessment in all cases where laboratory data are not available. Future studies should clarify the comparative assessment of the predictive value of models with and without laboratory inclusion.(3)

Determination of vascular age as a marker of CVD progression is particularly relevant at the stage of primary diagnosis, as well as in increasing patients' adherence to treatment.

Vascular age (synonyms: cardiac age, cardiovascular risk age, biological age) refers to the chronological age of an «ideal patient with the same level of cardiovascular risk as the subject, but in the absence of modifiable risk factors.

Research objective: To identify the causes of early vascular aging in patients with MS, to assess the relationship between vascular age and various metabolic disorders, to develop a model for predicting the degree of vascular age change in patients with MS.

Materials and Methods of Research.

A total of 72 people of both sexes (34 men and 38 women), asymptomatic, without cardiovascular disease, aged 30 to 70 years, were included in the study. Patients were divided into three groups: 1-group vascular age less than chronological age, 2-group vascular age equal to chronological age, and 3-group vascular age greater than chronological age. All patients were examined with assessment of anthropometric parameters (height, weight, body mass index (BMI), waist circumference (WC), measurement of blood pressure and collection of anamneses.

Biological cardiac age was calculated using a questionnaire from the NYC Department of Health and Mental Hygiene, which takes into account the following parameters: age, sex, height, weight, systolic blood pressure, presence of DM, taking antihypertensive medications, and smoking. This tool is based on the model used in the "Total Cardiovascular Risk Profile for Use in Primary Care: The Fremingham Heart Study Scale." and is intended for use by individuals aged 30 to 74 years who have no history of cardiovascular disease (e.g., heart attack, stroke, peripheral artery disease, or heart failure).

Results and Discussion: The mean age was 48.6 (±10.35) years and the mean vascular age was 55.7 (±16.05) years. The difference between both ages (7.1 ± 9.5) was statistically significant (P<0.0001). Risk factors such as increased body weight and obesity 65 (90%), hypertension 57.9(79.1%) and 28(38.8%) had smoking habits. The demographic and clinical picture of the patients is shown in Table 1

Table 1

Demographic and clinical characteristics of the study group

Chronological age	48,6
Vascular age	55,7
The difference	7,1

Men	34(7,2%)
Women	38(52,7%)
Body mass index (BMI) (kg\m2)	65(90%)
Smoking	28(38,8%)
Arterial hypertension	57,9(79,1%)
Diabetes mellitus	28(38,8%)
Does he take medication for his blood pressure	40,9(55,5%)

The distribution and comparative trend analysis of various risk factors in all three groups showed that the majority of individuals (72.45%) had a vascular age greater than their chronological age. Only 23.15% and 5.19% of patients had a vascular age less than or equal to their actual chronological age, respectively. Almost all risk factors, such as diabetes smoking, arterial hypertension, BMI, and OT, were significantly higher in group 3 with high vascular disease compared with patient groups 1 and 2. The key factors influencing the progression of vascular aging were obesity, arterial hypertension, and smoking and diabetes mellitus.

Conclusions.

The use of comprehensive cardiovascular risk assessment scales and lifetime risk assessment scales allows more patients to be included in preventive interventions from an early stage of disease and to identify the need for early and sustained interventions for risk factors. Interventions prescribed according to risk assessment can significantly reduce long-term risk. (3)

Thus, vascular age may be greater than passport age in the presence of risk factors such as obesity, arterial hypertension and smoking and diabetes mellitus. Determination of vascular age gives the patient an understanding of his or her condition and serves as a tool for reassessment of cardiovascular risk category.

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