

THE STATE OF THROMBOCYTIC LINK OF HEMOSTASIS IN CASE OF INSULIN RESISTANCE SYNDROME

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✓ Resume,

The significance of insulin resistance syndrome in the formation of platelet pathology of hemostasis was studied. The object of the study was 110 patients with metabolic syndrome. As comparison groups, 2 groups were identified (one - individuals without insulin resistance syndrome, the second group - patients with type 2 diabetes). The introduction into the diagnostic methods of hemostasis in the case of insulin resistance syndrome reduces the risk of the formation of cardiovascular diseases and the associated increased mortality of the population. The functional activity of platelets in violation of the sympathoadrenal and vaginal phases of the glycemic curve was studied.

Key words: insulin resistance, diabetes mellitus, hemostasis, glycemic curve, myocardial infarction.

СОСТОЯНИЕ ТРОМБОЦИТАРНОГО ЗВЕНА ГЕМОСТАЗА ПРИ СИНДРОМЕ ИНСУЛИНОРЕЗИСТЕНТНОСТИ.

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Изучено значение синдрома инсулинрезистентности в формировании патологии тромбоцитарного звена гемостаза. Объектом исследования являлись 110 пациентов с метаболическим синдромом. В качестве групп сравнения были определены 2 группы (одна - лица без синдрома инсулинорезистентности, вторая группа - больные сахарным диабетом 2 типа). Внедрение в методы диагностики гемостаза при синдроме инсулинорезистентности снижает риск формирования сердечно-сосудистых заболеваний и связанной с ними повышенной смертности населения. Изучено функциональную активность тромбоцитов при нарушении симпатoadrenal и вагоинсулярной фаз гликемической кривой.

Ключевые слова: инсулинорезистентность, сахарный диабет, гемостаз, гликемическая кривая, инфаркт миокарда.

ИНСУЛИН РЕЗИСТЕНТЛИК СИНДРОМИДА ГЕМОСТАЗ ТРОМБОЦИТАР БОСҚИЧИНИНГ ҲОЛАТИ

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Гемостаз тромбоцитар патологияси шакллантиришда инсулин резистентлик синдромининг аҳамияти ўрганилди. Тадқиқот объекти метаболик синдромли 110 бемор эди. Таққослаш гуруҳлари сифатида 2 гуруҳ аниқланди (биттаси инсулин резистентлиги синдромига эга бўлмаган шахслар, иккинчи гуруҳ 2 тип қандли диабет билан касалланганлар). Инсулинга резистентлик синдроми ҳолатида гемостазнинг диагностика усулларида кириш юрак-қон томир касалликлари ва у билан боғлиқ бўлган ўлим кўрсаткичининг ошиш хавфини камайтиради. Гликемик эгри чизигининг симпатoadrenal ва вагоинсуляр вазаларини бузган тромбоцитарнинг функционал фаолияти ўрганилди.

Калит сўзлар: инсулинга резистентлик, қандли диабет, гемостаз, гликемик эгри чизиқ, миокард инфаркти.

Introduction

In recent years, much attention has been paid to metabolic syndrome (MS), which is based on insulin resistance [1,5]. This syndrome includes a number of risk factors (RF): arterial hypertension (AH), impaired glucose tolerance (IGT), dyslipoproteinemia (DLP), obesity, hyperuremia and other risk factors. It should be noted that in individual studies, the number of components included in the MS varies [2,4]. However, hypertension, body mass index (BMI), hyperlipidemia and hyperinsulinemia remain the main components of MS.

The metabolic syndrome, being a clinical example of comorbidity, refers to clusters of risk factors for cardiovascular countervailing [3, 6]. Insulin resistance, arterial hypertension, dyslipidemia, hyperglycemia, united

by the framework of the metabolic syndrome, lead to the development of atherosclerotic changes in blood vessels and are accompanied by a change in hemostasis. Among the mechanisms involved in the processes of atherothrombosis, platelet hyperactivity is of the greatest importance, and the close relationship between the processes of atherogenesis and thrombosis in conditions of hyperglycemia, dyslipidemia, and arterial hypertension pathogenetically justifies long-term antiplatelet therapy [5,7,8].

The role of MS in the development of cardiovascular diseases and high mortality from them can be considered proven. However, the specific mechanisms of the formation of cardiovascular diseases in the case of insulin resistance syndrome require much further study. One of the main risk factors for the formation and death of a number of

cardiovascular and endocrine diseases are disorders in the hemostatic system. However, studies of recent decades have shown the important role of insulin resistance syndrome in the formation, more severe course and increased mortality in the metabolic syndrome [2,7].

Unfortunately, to date, questions about the role of insulin resistance in the formation of hemostatic disorders have not been studied. Meanwhile, the development of technologies for evaluating the hemostasis system, as well as methods for correcting disorders in the coagulation and anticoagulation systems of the blood, may be an important prerequisite for reducing morbidity and mortality [3,8].

The role of MS in relation to other internal diseases still needs to be studied. To date, there is convincing evidence of the important role of diabetes in the formation of hemostatic disorders. However, in the literature there is practically no information about the role of IGT in this process. Meanwhile, IGT, in a certain sense, can serve as a marker of insulin resistance (meaning impaired glucose tolerance 2 hours after glucose loading). In some cases, IGT can be considered as a pre-stage of diabetes mellitus. Therefore, clarification of the role of IGT in the formation of hemostasis disorders, as well as the development of methods for its treatment with IGT, can play a decisive role in the primary and secondary prevention of increased thrombosis and, as a result, a decrease in cardiovascular risk [4,6].

Purpose of work. To study the significance of insulin resistance syndrome in the formation of platelet pathology of hemostasis.

Materials and methods

The object of the study are 110 patients with metabolic syndrome. As comparison groups, 2 groups will be determined (one - individuals without insulin resistance syndrome, the second group - patients with type 2 diabetes).

All 2 groups were randomized according to the main demographic and clinical indicators.

The survey included the following methods: interrogation, biochemical instrumental.

Interview Methods:

- a standard WHO questionnaire for detecting angina pectoris (the presence of pain or other unpleasant sensations localized behind the sternum and / or / in the left half of the chest and left arm, appearing during physical activity and ceasing after a decrease in intensity or cessation of physical activity);

- a standard WHO questionnaire to identify possible myocardial infarction (history of severe pain piercing the front of the chest and lasting 30 minutes or more, in the absence of cicatricial changes on the ECG).

Instrumental methods:

- The ECG was recorded on a 6-NEK electrocardiograph at rest in 12 generally accepted leads. Analysis of IHD data was carried out according to the Minnesota code according to the following criteria: a certain myocardial infarction - the presence of cicatricial changes on the ECG (categories 1-1.2 minnesota code MC); angina pectoris - the presence of a pain syndrome that meets the criteria of the WHO questionnaire, in the absence of categories 1-1.2 MC; painless coronary heart disease - in the presence of ischemic changes on the ECG (categories 4-1.2 and 5-1.2 MC) in the absence of left ventricular hypertrophy,

angina pectoris and categories 1-1.2 MC; a possible history of myocardial infarction (according to the WHO questionnaire) - in the absence of cicatricial and ischemic changes on the ECG, as well as angina pectoris; possible coronary heart disease, including possible cicatricial changes in the myocardium by ECG (categories 1-2-8 and 1-3 MC), possible myocardial ischemia (categories 4-3, 5-3 MC), arrhythmic form (categories 6-1.2; 7 -1 and 8-3 MC), myocardial ischemia in the presence of left ventricular hypertrophy (categories 4-1.2 and 5-1.2 in the presence of 3-1.3 MC).

Results and discussion

When assessing blood pressure (BP), the average values of 2 measurements taken at intervals of at least 2 minutes were taken into account. The following values were taken for AH (in mmHg): systolic blood pressure (SBP) > 140 and / or / diastolic blood pressure (DBP) \geq 90. According to the current classification (WHO, 1999), the following categories are distinguished (in mm. Hg): optimal blood pressure (SBP < 120; DBP < 80); normal blood pressure (SBP < 130; DBP < 85); high normal blood pressure (SBP 130-139; DBP 85-89); 1 degree of hypertension (SAD 140-159; DBP 90-99); Grade 2 AH (GARDEN 160-179; DBP 100-109); Grade 3 hypertension (SBP > 180; DBP > 110). However, given the fact that in this study, hypertension was considered only as one of the components of MS, these categories were grouped as follows: normal blood pressure: SBP \leq 139; DBP \leq 89, AG - SBP \geq 140; DBP \geq 90. However, hypertension was recorded regardless of blood pressure if the patient took antihypertensive drugs within 2 weeks prior to the examination.

- overweight, according to the recommendations of the International Group on Obesity (1997), is fixed at the Kettle index (KI) calculated by the formula: weight (kg) / height (m)², \geq 25, and KI levels \geq 30 are taken as obesity. However, in population studies for BMI it is recommended to take KI values > 29 (Rose G.A., Blackburn H., 1968). Therefore, in this work, KI \geq 30 indicators were taken as the BMI criteria, since this KI level differs little from the BMI criteria recommended for population studies and, at the same time, meets the obesity criteria recommended by the International Obesity Group.

Biochemical studies:

- the lipid content in venous blood was determined during initial screening on an AA-2 autoanalyzer from Technicon, and upon repeated examination on an Hospitex analyzer. We studied the levels of cholesterol (cholesterol), triglycerides (TG) and β -lipoproteins (β -LP). The values of cholesterol > 260 mg% were taken for hypercholesterolemia (HC), the level of TG > 180 mg% for hypertriglyceridemia (GTG), and the level of β -LIP > 55 opt.ed for hyperbetalipoproteinemia (H β LP). (upon repeated examination, the concentration of β -LP was determined by the calculation method). For a comparative study of the criteria for assessing lipid parameters, the work also used the criteria of the European Society of Cardiology, the European Society of Atherosclerosis, the European Society of Hypertension and the criteria of the US National Cholesterol Education Program.

- the state of glucose tolerance was evaluated on the basis of indicators of the standard glucose tolerance test (SGTT) with the determination of fasting glycemia, as well as 1 and 2 hours after taking the subject 75 g. glucose. Evaluation of the data was carried out according to the

following criteria (in mg%): normal glucose tolerance: with fasting glycemia <100, 1 hour after glucose loading <160 and 2 hours <100; impaired glucose tolerance: fasting glycemia <100; 1 hour after glucose loading > 160 and / or 2 hours > 100; diabetes mellitus: fasting glycemia > 100, 1 hour after glucose loading > 180, 2 hours > 130. At the same time, the modern WHO recommendations (WHO, 1996) were used in the work, according to which cases of glycemia after 2 hours are accepted after glucose loading ≥ 140 mg% with normal fasting glycemia (<100 mg%).

Conclusions

The introduction into the diagnostic methods of hemostasis in the case of insulin resistance syndrome reduces the risk of the formation of cardiovascular diseases and the associated increased mortality of the population. The functional activity of platelets in violation of the sympathoadrenal and vaginal phases of the glycemic curve was studied. New methods for the prevention and treatment of platelet hemostasis disorders have been developed which allow achieving economic efficiency by reducing hospital stays, as well as medical efficiency due to minimal morbidity, disability and mortality.

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