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*Mirabdullaev I.A., 3rd year Master's degree.,*

*Usmanova U.I., associate professor.,*

*Musashaykhov U.M.,*

*Musashaykhova Sh.M.*

*Department of GP-1*

*Department of Propaedeutics of Internal Diseases*

*Andijan State Medical Institute*

## **HYPERURICEMIA AND ARTERIAL HYPERTENSION**

### **RELATIONSHIP OF HYPERTENSION AND RISK FACTORS**

**Resume:** The results of a number of studies indicate that HY is a predictor of the development of cardiovascular events and death in patients with hypertension and congestive heart failure, and, apparently, can be considered as an independent risk factor for cardiovascular complications.

According to a number of authors, the frequency of hypertension in patients with hypertension ranges from 36 to 58%, and in combination with metabolic syndrome increases to 72%.

**Keywords:** hyperurekemia, arterial hypertension, risk factors, cardiovascular pathology.

*Мирабдуллаев И.А, магистр 3 курса.,*

*Усманова У.И, доцент.,*

*Мусашияхов У.М.,*

*Мусашияхова Ш.М.*

*Кафедра ВОП-1*

*Кафедра пропедевтика внутренних болезней*

*Андижанский государственный медицинский институт*

## **ГИПЕРУРИКЕМИЯ И АРТЕРИАЛЬНАЯ ГИПЕРТЕНЗИЯ**

### **ВЗАИМОСВЯЗЬ ГИПЕРТОНИИ И ФАКТОРОВ РИСКА**

**Резюме:** Результаты ряда исследований свидетельствуют о том, что ГУ является предиктором развития сердечно-сосудистых событий и смерти у больных с АГ и застойной сердечной недостаточностью, и, по-видимому, может рассматриваться как независимый фактор риска сердечно-сосудистых осложнений.

По данным ряда авторов, частота АГ у больных ГУ колеблется от 36 до 58 %, а в сочетании с метаболическим синдромом увеличивается до 72 %.

**Ключевые слова:** гиперурикемия, артериальная гипертония, факторы риска, сердечно-сосудистая патология.

**Relevance.** The relevance of the problem of GU reflects the current wave of related scientific publications – we are talking about thousands of informational materials per month [4,9]. The articles are devoted not only to the problems of hyperuricemia itself, but also to its influence on various aspects of internal diseases, in particular, the cardiovascular complications provoked by the state [2,7,11]. "Today, it is extremely important for a rheumatologist, cardiologist, endocrinologist, therapist to know from which figures of uricemia it is necessary to begin the prevention of possible complications: multidisciplinary in this matter is more than obvious! GU is closely associated with type 1 and type 2 diabetes mellitus (type 1 and type 2 diabetes) and metabolic syndrome (MS) in general [1,6,8].

At one time, we proposed to consider GD as one of the important signs of metabolic syndrome, which, unfortunately, was not done, although this important point largely determines the course of a number of diseases," the speaker wrote.

Today, the genetic prerequisites of GU are well known. In the largest genome-wide study of GWAS (Genome Wide Association Studies) with the participation of 147 thousand people, 183 loci affecting purine metabolism were identified [5,7,10]. The mechanisms of the development of GU are associated

with metabolic disorders and a decrease in the excretion of MC. Interestingly, compared to the period from 1998 to 2011, the number of genes responsible for the exchange of MC, which were discovered by researchers in the next 8 years up to 2019, has more than tripled. This list includes genes responsible for glucose transport (GLUT9), as well as those programming the transport and metabolism of MK - URAT1, ABCG2 (ATP-binding cassette transporter), SLC22A1 (polyspecific cation transporter) and others [3,8,12].

The association of the prevalence of hyperuricemia with the place of residence is not in favor of urban residents who are more likely to suffer from hyperuricemia, which, apparently, is again associated with a wider prevalence of other risk factors for CVD: dyslipidemia, obesity and metabolic syndrome[2,5,10]. Using a model of multiple logistic regression, the relationship of hyperuricemia with cardiometabolic risk factors, the significant significance of factors such as obesity, the use of diuretics and lipid spectrum disorders (where triglycerides make the main contribution) was shown.

Professor Zhernakova noted that interesting data were obtained during the implementation of an observational program to assess epidemiological data on the determination of uric acid levels in patients with hypertension in combination with metabolic syndrome, diabetes mellitus and joint pain. The study included more than 9617 patients (56.6% - men and 43.4% - women). The criteria for inclusion in the study were age 30-80 years, cholesterol level over 4.5 mmol/l, hypertension in combination with metabolic syndrome or diabetes mellitus, arthralgia. The combination of hypertension and diabetes mellitus had 33% of those included in the study, half of the patients had a combination of hypertension and metabolic syndrome, and more than 70% had hypertension and arthralgia. Hyperuricemia among these patients was distributed evenly in general, but it was most often observed in patients with hypertension and diabetes (69.6%), more often even than in patients with hypertension and arthralgia (64.2%), with hypertension and metabolic syndrome (61%) [6,9].

These data once again emphasize the importance of hyperuricemia as a cardiometabolic risk factor.

Another study was devoted to the study of real clinical practice for measuring uric acid levels in the primary outpatient unit.

**The purpose of the study.** The aim of the study was to study the problem of hyperuricemia as a risk factor for hypertension. To study the regional features of the prevalence of the main risk factors and the structure of comorbid pathology in patients with AH and AH.

**Materials and methods of research.** 106 patients with GU and AH were included in the study. Inclusion was carried out with informed consent. Exclusion criteria: age of the patient over 75 years, acute or chronic exogenous intoxication, refusal of the patient from the study.

**The results of the study.** The results obtained in the course of the study showed the existence of correlations of HD with obesity, impaired lipoprotein metabolism (increased levels of OH, LDL, hypertriglyceridemia), as well as hypertension and target organ damage. In patients with gout and BSU, the prognostic value of hypertension becomes especially unfavorable due to the high frequency of concomitant metabolic disorders.

In our study, a violation of lipoprotein metabolism was detected in 93% of patients with gout and 90% with BSU, and a combination of hypertriglyceridemia and GU in individuals with abdominal obesity with gout in 45%, with BSU in 22% of patients.

The relationship between urate dysmetabolism and obesity, primarily abdominal, is confirmed by a number of population studies indicating a significant frequency of BSU in overweight and obese people [7]. It is known that in such patients, the probability of target organ damage is especially high (LVH, hypercreatininemia, microalbuminemia, an increase in the thickness of the intima-media of the carotid arteries) [3].

Analysis of the data of our study indicates a combination of hyperuricemia with a more pronounced increase in blood pressure. In patients with gout and BSU, the II st. (53 and 57%) and I st. AH (37 and 30%) prevailed, with the predominance of unfavorable characteristics of the daily blood pressure profile by the type of insufficient reduction of blood pressure at night and night hypertension ("non-dippers" and "night pickers"). A number of studies have shown that in patients with GD, changes in the daily blood pressure profile were characterized by a tendency to decrease the degree of nocturnal decrease in DBP and an inversion of the daily rhythm of DBP, as well as an increase in nocturnal variability of BP [2, 5, 11].

In connection with the above, the correction of metabolic disorders of MC against the background of hypertension should be considered among the priority measures of primary and secondary prevention, including, first of all, the impact on lifestyle features - restriction of foods containing a large amount of purine bases, refusal to take alcohol and the appointment of adequate antihyperuricemic and antihypertensive therapy in patients with gout and asymptomatic hyperuricemia.

**Conclusion.** Thus, a reliable relationship between hyperuricemia and hypertension has now been established. At the same time, there is not enough data to recommend treatment for asymptomatic hyperuricemia. There is also a need for a clearer understanding of the biological role of uric acid and its connection with cardiovascular diseases. Although uric acid has an effect on pro-inflammatory vascular cells and adipocytes, it can also function as an antioxidant.

It is widely discussed that uric acid can have various, not yet fully deciphered effects in the development of cardiovascular diseases. The medical community is looking forward to the results of these studies.

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