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FEATURES OF CARDIOVASCULAR DISORDERS IN PATIENTS WITH GOTH

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Abstract:
This article describes features of cardiovascular diseases, based on studies of echocardiography in patients with Goth. And also in comparison with patients who have arterial hypertension.

Key words: disability, hypertension, d islipidemia, Monoarthritis, Analysis

Introduction

Relevance: According to WHO estimates, cardiovascular diseases are the most common cause of death in the population of industrialized countries. Cardiovascular diseases, in the structure of which arterial hypertension (AH) and coronary heart disease (IHD) occupy a leading place, continue to constitute the main burden of losses in society due to high mortality (54-56% in the structure of total mortality), disability (up to 40% of all causes of disability), a high incidence rate. It is now well known that obesity, arterial hypertension , d islipidemia, IHD are frequent companions of gout [1, 2]. It is known that the main cause of death in patients with gout is cardiovascular diseases [3, 4, 5, 6]. It was found that the vast majority of patients with gout (about 2/3 of patients) die precisely from cardiovascular diseases associated with atherosclerosis and only less than a quarter from chronic renal failure [4,6].

The aim of our study was to study cardiovascular disorders in patients with gout.

Materials and methods. We recruited 75 men with gout between the ages of 32 and 79. The age of patients at the onset of the disease averaged 46.8 ± 9.1 years. In the majority of patients (71.1%), the disease began at the age of 37 to 54 years.

The earliest development of gout was noted at the age of 29; the latest onset of gouty arthritis was at the age of 74. Our patients were examined for the presence of cardiovascular diseases. laboratory blood parameters were investigated for lipid spectrum, uric acid content, c- reactive protein (CRP), and echocardiographic study was carried out in order to study the morpho-functional characteristics of the left ventricular (LV) myocardium.

The geometry of the left ventricle, the presence of concentric left ventricular remodeling (LVLV), and eccentric left ventricular remodeling (LVER) were studied.

The discussion of the results. The average duration of illness at the time of treatment was 7.6 years, with fluctuations from 2 months to 39 years. In the majority of patients, gout debuted with a lesion from the statutes of the lower extremities: in 58 (77.33 %) - first metatarsophalangeal, in 11 (14.6%) - ankle, in 4 (5.33%) - knee and in 2 (2.6 %) - small joints of the feet. Among the types of arthritis, the most common was polyarthritis, diagnosed in 45 (60%) patients. Monoarthritis and oligoarthritis were less common, in 27.5 and 12.5% of cases, respectively. When assessing the anamnesis, the variant of arthritis was determined by the longest duration of the last exacerbation over the past year . At the time of the first examination, 20 (26.7%) patients were diagnosed with acute gouty arthritis, 10 (11.1%) patients had a protracted arthritis (arthritis lasting from 3 weeks to 3 months), 21 (28%) patients were diagnosed with chronic arthritis (arthritis lasting> 3 months), 26 (34.6 %) patients were examined in the interictal period. The incidence of arthritis relapses over the last year of illness averaged 3.0. In 70 (93.3%) patients, the frequency of arthritis attacks ranged from 1 to 6 attacks, and in 5 (6.7 %) patients, arthritis recurred from 6 to 9 times during the last year of the disease.

The number of joints swollen at the time of examination was 3 [1; 6] with fluctuations from 1 to 28 joints. Moreover, if in the case of acute arthritis this indicator was 2 [1; 3], then with protracted and chronic - 3 [2; 6] and 4 [2; 7] joint, respectively ($p < 0.001$; $p < 0.001$ between groups with acute and protracted and acute and chronic arthritis).

We carried out a comparative analysis of the number of affected joints with the duration of the disease. Thus, the number of affected joints for the entire period of the disease (in history) was 9 [5; 13] and ranged from 1 to 28.

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All patients were divided into 3 subgroups: Group I consisted of patients with gout duration up to 5 years (n = 32); II - 5-10 years (n = 22) and III - more than 10 years (n = 21) . In 40 patients with recurrent gout and 35 patients with chronic gout included in the study, the incidence of cardiovascular diseases and comorbidities was studied (Table 1).

Table 1 Characteristics of concomitant pathology in patients with gout

Indicators	The course of gout			
	recurrent (*n* = 40)		chronic (n = 35)	
	N	%	N	%
Arterial hypertension	23	57.5	31	88.57
Coronary artery disease (history of myocardial infarction)	17 (four)	35.4 (8.3)	17 (4)	40.5 (9.5)
Diabetes mellitus type 2	7	14.6	eleven	26.2
Metabolic syndrome	24	50.0	24	57.1
Chronic heart failure	nine	18.7	eleven	26.2
Chronic renal failure	12	25.0	13	30.9

In the group of patients with recurrent course of gout, arterial hypertension at the time of the study was diagnosed in 23 (57.5 %) patients, and in group e with chronic course - in 31 (88.57 %) patients.

Of 54 patients with arterial hypertension, 48 (88.9 %) people were diagnosed before going to the rheumatology department. Long-term (> 3 months) antihypertensive therapy at the time of inclusion in the study was received by 23 (42 , 5-9 %) patients with arterial hypertension, while the target blood pressure levels were achieved in 11 (20 , 37 %) of them.

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Among patients of the first group with arterial hypertension, 12 (52.1 7%) patients were diagnosed with grade I arterial hypertension, 6 (26 , 0%) with grade II arterial hypertension, and 5 (21.7 %) with arterial hypertension. hypertension of the III degree of severity. And among patients of the second group with arterial hypertension, 18 (48.6%) patients were diagnosed with grade I arterial hypertension, 11 (29.8%) - grade II arterial hypertension, in 8 (21.6%) - grade III arterial hypertension severity (21.6%) .In the group of patients with chronic gout, arterial hypertension of II and III degrees was more common than in patients with a recurrent course of the disease. We considered it appropriate to compare the indicators of the level of arterial hypertension with the duration of gout (Table 2).

The relationship between arterial hypertension and the duration of gout (%)

Table 2

Duration of illness and (years)	The degree of arterial hypertension		
	I (n = 29)	II (n = 15)	III (n = 10)
<2	6.15	1.54	1.54
2-5	9.2	6.15	3.08
6-10	23.1	9.2	6.15
> 10	15.4	10.79	7,7

54 patients with gout with arterial hypertension were grouped in the following way: the first group included 29 patients whose blood pressure fluctuated within 140 / 90-160 / 90 mm Hg. Art .; the second subgroup consisted of 15 patients with arterial pressure 140 / 100-160 / 100 mm Hg. Art .; the third - 10 people who had a blood pressure of 160 / 100-180 / 110 mm Hg. Art. The results of comparing the level of arterial hypertension with the duration of the disease indicate the presence of a certain relationship - with an increase in the duration of gout, the number of patients suffering from arterial hypertension increases .

At the same time, attention is drawn to the fact that when the disease is more than 10 years old, the number of patients with gout with arterial hypertension of II and III degrees increases. The median age at which patients developed arterial hypertension was 50.5 [44.7; 57.0] years, and its duration - 3.9 [1.2; 8.7] years. At the time of inclusion in the study, the median age of patients with arterial hypertension was 54.8 [48.5; 60.5], which statistically did not significantly distinguish them from patients who did not have such a pathology - 54.3 [39.0; 59.1] (p <0.01). In the majority of patients (46 people), arterial hypertension developed against the background of gout and in 19 it preceded it. A relationship was found between age at development of gout and onset (p <0.01). Table 8 shows an analysis of the age at which arterial hypertension was first detected in patients with different ages of onset of gout. The relationship between the age of newly diagnosed arterial hypertension and the onset of gout ("= 65)

Table 3

Age of onset of gout (years)	*n* (%)	Age at detection of hypertension
<30	2 (3.1)	29.2 [23.9; 34.5]
30-39	20 (36.9)	35.3 [28.1; 45.5]
40-49	19 (35.18)	43.1 [36.4; 50.7]
50-59	10 (18.51)	52.9 [45.3; 63.9]
60-69	3 (5 , 6)	62.3 [52.7; 65.8]

As can be seen from Table 3, in the majority of patients with gout (72.3%), arterial hypertension was first detected at the age of 30-49 years. Ischemic heart disease was detected in 14 (35.0 %) patients with a recurrent course, and in 14 (46.6 %) patients with a chronic course of gout.
Only 4 patients had coronary artery disease in the department, which indicates a high percentage (88%) of patients' awareness. Among patients with coronary heart disease in both groups, 4 patients had a history of myocardial infarction . 22 (78.57 %) patients were diagnosed with exertional angina pectoris I-III FC.

As can be seen from Table 9, patients with angina pectoris II and III functional classes were more common in the group of patients with chronic gout than with recurrent ones. The median and interquartile range of age at onset of coronary heart disease was 51.5 [48.7; 57] years, and the duration of ischemic heart disease - 4.3 [2.1; 7.1] years. At the same time, patients with coronary heart disease were on average 3 years older than those without coronary heart disease (55.5 [51.0; 61.8] and 53 [48.0; 59.1] , respectively (p <0.01)). In 7 (2 5%) patients, the development of coronary heart disease preceded the first gouty arthritis, in the remaining 26 patients, coronary heart disease developed against the background of gout. In order to diagnose chronic heart failure, we used the classifications recommended by the New York Association of Cardiology [7] and VNOK / OSSN (2007) [8]. In general, of the examined patients, signs of cardiac insufficiency were observed in 17 (22.6 %) individuals, while its frequency was higher among patients with a chronic course of the disease than with recurrent ones - 9 (25.7%) versus 8 (20.0 %), respectively. Most patients had signs of chronic heart failure FC I - 12 patients, which was 60%, in 8 (40%) patients - FC II chronic heart failure (Table 4).
The frequency and nature of chronic heart failure in patients with gout

Table 4

CHF form	The course of gout			
	recurrent (n = 40)		chronic (n = 35)	
	n	%	N	%
CHS I FC	five	12.5	five	14.3
HSN II FC	3	7, 5	four	11.48

The average age of patients with chronic heart failure significantly differed from that in patients without chronic heart failure (57.1 ± 9.0 versus 54.2 ± 8.9 years). The duration of gout in patients with and without chronic heart failure was comparable. The median age at which patients developed chronic heart failure was 53.1 [47.2; 57.8] years, and its duration - 3.1 [1.3; 5.7] years. In the majority of patients (18 people), chronic heart failure developed against the background of gout, and only in two of them it preceded it.

We carried out a comparative analysis of cardiovascular disorders and articular syndrome in patients with gout, namely, we conducted a comparative analysis of articular
syndrome in patients with arterial hypertension, ischemic heart disease, chronic heart failure and without them. The incidence of arterial hypertension in patients with gout was 72 % (n = 54), ischemic heart disease - 37.3 % (n = 28) and chronic heart failure - 24 % (n = 18). Analysis of the articular syndrome and the components of the gout severity index in patients with and without cardiovascular diseases revealed a number of differences in T ak; in patients with gout with the presence of arterial hypertension, coronary heart disease and chronic heart failure, the number of affected joints during the entire period of the disease was significantly higher and the index the severity of the disease is higher than in patients without it. Patients with cardiovascular disorders were older in age than patients without them. Topic gout was more common in subgroups of patients with coronary heart disease and chronic heart failure (53% and 50%, respectively). The number of subcutaneous tophi and affected joints at the time of examination did not differ in the compared subgroups, averaging 3 [2.0; 7.0] and 4 [3.0; 9.0], respectively (p <0.01). We studied the relationship between arterial hypertension and some laboratory parameters of the lipid spectrum and creatinine levels in patients with gout in two compared subgroups. The first group consisted of patients with gout with arterial hypertension (n = 54) and the second group included patients with gout without clinical and additional signs of arterial hypertension (n = 21). The results obtained showed that patients with gout with arterial hypertension had significantly higher levels of uric acid, total cholesterol, low density lipoprotein cholesterol, triglycerides and total coronary risk than in patients without such, but it should be noted that the level of high density lipoprotein cholesterol in this group of patients was significantly low. In patients with gout with arterial hypertension, the levels of serum creatinine and urea did not differ much from the values of these parameters in patients with gout without arterial hypertension .

In our study with the aim of studying the structural and functional state of the myocardium in patients with gout, 38 patients were included (all men). Echocardiographic examination was carried out in patients with various variants of the course of the disease (recurrent and chronic). Analysis of the parameters of central hemodynamics revealed significant changes depending on the clinical course of the disease.

The end-dystolic size and end-dystolic volume of the left ventricle in patients with chronic gout were increased by 4.65 and 10.3%, respectively, compared with patients with a recurrent course of the disease, and the end-systolic size and end-systolic the volume of the left ventricle was 2.4 and 5.45%, respectively (p <0.05). The relative wall thickness of the left ventricle changed unidirectionally with the values of the thickness of the interventricular septum and the thickness of the posterior wall of the left ventricle and was 106.8% when comparing groups 1 and 2. In the studied groups, the value of the left ventricular myocardial mass index was practically the same (p <0.05).

In our work, we encountered two types of transmitral flow spectrum : normal and hypertrophic. Analyzing the incidence of left ventricular diastolic dysfunction depending on the course of the disease, it was found that this disorder occurred in 23.1% of patients with recurrent gout and in 36.0% of patients with chronic course of the disease.

Thus, in the examined patients suffering from gout, pronounced changes in the parameters of the structure of the left ventricle were observed depending on the course of the disease, while among some parameters of hemodynamics, changes were revealed to a lesser extent and did not reach statistical significance. In patients with primary gout, diastolic dysfunction of the left ventricle is recorded in 31.6% of cases, the frequency of which depends on the variant of the clinical course of the disease. It was found that every fourth patient did not have architectural disturbances, practically in one third of patients concentric hypertrophy of the left ventricle was formed, in 26.7% of cases the presence of eccentric hypertrophy of the left ventricle was noted , and a fifth of patients, with a normal mass index of the left ventricular myocardium, had changes in its cavities and (concentric remodeling of the left ventricle was noted).

The frequency of formation of various geometric models of the left ventricle varied depending on the severity of the disease. Thus, in the group of patients with chronic gout , concentric hypertrophy of the left ventricle was recorded in 32% of cases , eccentric hypertrophy of the left ventricle was formed in 24% of cases and concentric remodeling of the left ventricle was observed in 16% , and in 28% of men normal parameters of the geometry of the left ventricle were found. In the group of patients with

the recurrent course of the disease also more often formed concentric left ventricular hypertrophy (46.1%), in the second place in frequency, in contrast to group 2, there was concentric remodeling of the left ventricle (23.1%). Eccentric left ventricular hypertrophy and normal geometry of the left ventricle in the group of

patients with recurrent gout occurred with the same frequency (15.4% each). In our study, the total incidence of left ventricular hypertrophy was 61.5% in the group of patients with recurrent gout and 56% in patients with chronic course of the disease.

Where in the predominant remodeling option is concentric left ventricular hypertrophy . It is known that this type of left ventricular architectonics is an unmodifiable cardiovascular risk factor and the most unfavorable in terms of the development of heart failure. It is interesting to note that, in spite of the absence of arterial hypertension , violations of the left ventricular architectonics were revealed in 54.5% of patients. It turned out that in 27.3% of patients with gout with normal blood pressure, diastolic filling of the left ventricle is disturbed. More , than 33% of patients with gout, suffering from hypertension , develops so-called left ventricular diastolic dysfunction. Analyzing the data presented above, we can conclude that changes in the architectonics of the left ventricle and its diastolic function in patients with gout are diverse and depend on the variant of the course of the disease, types of geometry of the left ventricle, and the presence of arterial hypertension .

Conclusions

Thus, the association of cardiovascular disorders (arterial hypertension and coronary heart disease) not only sums up the risks of each individual disease, but also multiplies the number of new cardiovascular events, mortality from them, which, in general, negatively affects the trends in morbidity and mortality from diseases of the circulatory system. The choice of optimal approaches to the strategy and tactics of managing such patients allows in real clinical practice to reduce the risks of developing unfavorable outcomes and, thereby, to integrate different strategies of secondary prevention - individual, high-risk and population-based.

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