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ASSESSMENT OF HEMODYNAMICS OF THE KIDNEYS IN YOUNG PATIENTS WITH ARTERIAL HYPERTENSION

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Abstract
To clarify the role of cardiovascular lesions and diseases of the kidneys, their vessels and structures urinary system diseases in the development of arterial hypertension (AH) 60 men aged 18 to 40 years were examined in young men sent by the commission to the hospital for examination and verification of the diagnosis of primary hypertension. Hemodynamic parameters were assessed based on the results of office and monitor measurements of blood pressure, echocardiography in B-mode. The structure and function of the urinary organs and kidneys were studied according to the data of static and dynamic scintigraphy, ultrasound of the kidneys, assessment of microalbuminuria in morning urine and glomerular filtration rate by endogenous creatinine. The level of uric acid, creatinine and urea in blood plasma was studied. The study made it possible to establish that arterial hypertension is not an isolated disease, but is combined with a number of anomalies and lesions of the kidneys, their vessels, organs of the urinary, cardiovascular systems, as well as metabolic changes. In such patients, anomalies in the development of the kidneys and their structures, which are based on genetic causes or disorders of intraembryonic development, account for more than half of the identified cases of pathology. Based on the data obtained, a conclusion was made about the great importance of genetic and congenital anomalies in the development of the kidneys and their structures in the development of chronic arterial hypertension syndrome in young men.

Keywords: arterial hypertension, hereditary burden, hemodynamics, functions kidneys.

Currently, much attention is paid to the study of the relationship between kidney damage in hypertensive diseases and neurohumoral and metabolic disorders leading to the occurrence of cardiovascular complications. There is no doubt that arterial hypertension (AH) causes progressive kidney damage up to the development of nephrosclerosis and end-stage renal disease (newest cases of renal failure due to diabetic nephropathy and hypertensive nephroangiosclerosis) [1,6,12]. The development of chronic renal failure as a complication of hypertension is associated with both epidemiological and demographic characteristics (age, gender, severity and duration of hypertension, racial and genetic factors, diabetes mellitus - DM, parenchymal kidney disease), and with external influences (diet, ongoing antihypertensive therapy) [3,9,19]. At the incidence of hypertension-related terminal damage of kidney disease is steadily increasing, and this growth does not tend to slow down in the future. Arterial hypertension and chronic kidney disease refers to diseases that, by themselves or in combination with each other, another effect on renal microcirculation and hemodynamics, and an increase BP and CKD are closely related according to the “vicious circle” principle [5,11,13]. But despite available evidence of a mutually aggravating relationship between hypertension and CKD, and above all, a high incidence of complications in the combination these two pathological conditions, it is impossible not to notice the extreme the rarity of research in the field of studying the main risk factors and pathogenetic mechanisms underlying their development [4,8,10].

To assess the functional state of the kidneys in clinical practice, more often of all, the determination of glomerular velocity is used filtration (GFR), but its decrease is observed only with a decrease in the number of functioning nephrons and cannot serve as an early marker of kidney damage, which has become a prerequisite for the search for more sensitive methods [14,18].

In modern clinical studies conducted over the last years, confirmed the prognostic value of disorders of the intrarenal hemodynamics in the progression of hypertension and CKD. However, there is still no clear ideas about issues related to the characteristics of violations of the renal hemodynamics, taking into account the severity and staging of CKD, including associated with hypertension due to their insufficient knowledge. In addition, little is known about the role of dyslipidemia as an independent, independent from others and important risk factor for the development of various complications in patients with hypertension and CKD [15,16]. Considering that lipid metabolism disorders are closely related to renal diseases, increasing the likelihood of damage to the glomeruli, and timely the appointment of

pathogenetic therapy undoubtedly contributes to slowing down pathological process leading to chronic renal insufficiency (CRF). However, the question of the positive impact lipid-lowering drugs directly on the wall of the renal vessels and improving the blood supply to the organ remains not fully understood, given the inconsistency of the data. An important point in studying the influence dyslipidemia on the wall of the renal vessels is the determination of the initial manifestations of lipid metabolism disorders in patients with chronic renal diseases, especially those associated with hypertension, in order to identifying high-risk groups with poor outcomes in CKD, as well as preventing the development of cardiovascular complications [8,20].

Considering the recent increase cases of hypertension in young and even adolescence occurs the question of how early endothelial dysfunction and the first target organ damage develops in AH in young patients. There are practically no studies on this issue.

The purpose of this study is to identify the first signs of kidney damage in young patients < 40 years of age during the development of hypertension.

Material and Methods

We examined 60 men aged 18-40 years (mean age 32.7±4.6) with arterial hypertension I-II stage and risk I-III. The duration of hypertension ranged from 1 to 9 years (mean duration 4.6±1.1). Average level of systolic blood pressure (SBP) was 152.23±7.12, diastolic blood pressure (DBP) 97.12±4.13 mm Hg. Verification of the diagnosis of hypertension was carried out according to the data ambulatory blood pressure monitoring (ABPM) and results tests with dosed physical activity (FN), which revealed a hypertonic type of BP response to FN. The exclusion criteria were symptomatic the nature of hypertension, anamnestic data on the presence of chronic diseases of the kidneys and urinary tract, diabetes. General clinical examination of patients included a history, physical examination. All patients underwent a clinical blood test, urinalysis, as well as electrocardiography (ECG) and ultrasound (ultrasound) of the kidneys. BP was measured by the indirect Korotkoff method after 15-minute rest in sitting position, used average value from two consecutive measurements, conducted at 3-minute intervals. When assessing hypertension, the results of blood pressure measurements taken over several days were taken into account. The criteria for arterial hypertension were the mean value of SBP >140 mm Hg. and/or DBP >90 mmHg before taking antihypertensive drugs.

Results and Discussion

In the examined group, 47% (n=28) of patients had a family history of hypertension (AH) on the mother's side and 33% (n=20) on the father's side. Both parents had HD in 17% (n=10) of young people. Dynamic examination of the kidneys in 95% (n=57) patients revealed various disorders of renal hemodynamics. The vast majority of 92% (n=55) experienced a decrease in renal blood flow in the left and right kidneys. Differences between the parameters of the right and left kidneys were not statistically significant. MAU was diagnosed in 32% (n=19) of the examined patients. Its average level was 67.6±12.7 mg/l. An analysis was made of the prevalence of varying degrees of kidney damage in patients without and with MAU. When comparing the two groups, it was noted for the first time that patients with MAU significantly more often had a decrease in renal blood flow to grade II-III in the left and right kidneys (<410 ml/min at N 680 ± 50 ml/min). There were no significant differences between the groups in terms of the degree of AH. Interesting results have been obtained when measuring GFR. Despite the expressed decreased renal blood flow in hypertensive patients with MAU in most cases, GFR remained in within the normal range. However, in patients without MAU hyperfiltration was observed in 20% (n=12) of cases, which is probably a compensatory response of the RAAS to the deterioration of the blood supply to the kidneys. Since men with MAU do not have hyperfiltration, it is possible to to assume that they had a progression of the pathological process and GFR decreased. Normal GFR in patients with MAU is most likely the first manifestation of emerging morphological and functional changes in the arterial system and the glomerular apparatus, that is, remodeling of the vessels of the kidneys. The results obtained allow us to come concluded that vascular remodeling in young men < 40 years of age occurs quite early with a short history increase in blood pressure for 1 to 9 years, even with unstable and moderate increase in blood pressure up to 152.23±7.12/97.12±4.13 mm Hg. If on this stage, the disease is not diagnosed, then, apparently, prerequisites are created for the development of irreversible changes affecting the glomerular apparatus, with a violation of the glomerular filter and the appearance of MAU. This problem requires further research for the early diagnosis of kidney damage and the prevention of the development of MAU, changes in renal blood flow and GFR. Probably, already now we can talk about the advisability of early prescription of antihypertensive therapy, preferably angiotensin-converting enzyme inhibitors.

In the present study, we obtained data confirming the fact of frequent inheritance AH syndrome in young men of military age. All conscripts suffering from hypertension in our sample had a hereditary burden for this disease. According to the literature,

hereditary predisposition to develop almost all types of arterial syndrome hypertension has been confirmed by a number of population genetic, family genealogical and clinical studies [2,7,17]. Risk development of hypertension in men at a young age increases by 2.5 times in the presence of hypertension in one of the relatives of the first generation, in the presence of hypertension in two or more relatives the risk increases by 3.8 times.

According to the data of the previous stage of the study, the nature of hypertension was assessed by doctors as primary, without prior diagnosis organic cardiovascular disease system, organs of the urinary system or endocrine pathology.

The study made it possible to establish that diseases of the kidneys and organs of the urinary system are one of the most common factors associated with the formation and development of arterial hypertension in young men. In 80% of the patients examined by us, sent by medical commissions to conduct an expert study in order to confirm abnormally high blood pressure and identify possible secondary hypertension, we identified certain diseases of the kidneys and organs of the MVS. Of these, anomalies in the structure and changes in the topography of the kidneys accounted for more than half of all cases - 64.8%, inflammatory and metabolic lesions - 24% of cases, vascular pathology - 11.2% of cases.

Used Literature

1. Almazov V.A., Shvarts E.I., Shlyakhto E.V. and other Pathogenesis of hypertension. First results of molecular genetic studies//Arterial hypertension. 2000.V.6, No.1. pp.7-15.
2. Bryazgunov I.P. Symptomatic arterial hypertension in pediatric practice.M.: Medpraktika. 2003.112 p.
3. Kislyak O.A. Arterial hypertension in adolescents. Guide to arterial hypertension / Edited by Acad. E.I. Chazova, prof. I.E. Chazovoi. M.: Media Medica, 2005.S.472-475.
4. Mänttäri M., Tiula E., Alikoski T., Manninen V. Effects of hypertension and dyslipidemia on the decline in renal function. Hypertension 1995; 26:670-75.
5. Oganov R.G. Risk factors and prevention of cardiovascular diseases. Medicine. 2003. No. 2. pp.10-15.
6. Osovets S.K. Modern ideas about the predisposition to essential hypertension // Medical News. 1999. No. 6. S.3-8.
7. Ota Shuk. Glomerular filtration. Functional study of the kidneys. Prague. Avicenum. 1975. S.131-167.

8. Tsaregorodtseva L.V. Arterial hypertension in children and adolescents. The quality of life. The medicine. 2005. No. 3. pp.43-47.
9. Naimova S. A. Principles of early diagnosis of kidney damage in patients of rheumatoid arthritis and ankylosing spondiloarthritis // British Medical Journal. - 2021. - Vol. 1. - No. one.
10. Naimova N. Sh., Khamidova N. K., Azamov B. Z. Features of coagulation and cellular hemostasis in rheumatoid arthritis in patients with cardiovascular pathology // New day in medicine. – 2019. – no. 2. - S. 219-222. [in Russia]
11. Shadjanova N. S. Features of hemostasis in rheumatoid arthritis patients with ischemic hearth disease // International Engineering Journal for Research & Development. - 2022. - Vol. 7. - No. 1-P. - P. 1-5.
12. Tulkinjanovna S. G., Anvarovich R. A. The influence of defiency of microelements in children with bronchial hyperreactivity// ACADEMICIA: An International Multidisciplinary Research Journal (ISSN: 2249-7137)–2020. April. - 2020. - T. 10. - No. 4. - S. 846-853.
13. Boltayev K. J., Naimova S. A. Risk factors of kidney damage in patients with rheumatoid arthritis // WJPR (World Journal of Pharmaceutical Research). - 2019. - T. 8. - No. thirteen.
14. Naimova Sh. A., Latipova N. S., Boltaev K. Zh. Coagulation and platelet hemostasis in patients with rheumatoid arthritis in combination with cardiovascular disease // Infection, immunity and pharmacology. – 2017. – no. 2. - S. 150-152. [in Russia]
15. Shalnova S.A., Deev F.D. and other Prevalence of arterial hypertension in Russia//Prevention of diseases and health promotion. 2001. No. 2. S.3-7.
16. Naimova Sh. A. The importance of innovative pedagogical activity in education // Education devotees. - 2022. - T. 14. - №. 1. - P. 103-107. [in Uzbek]
17. Shesterikova N.V. Dynamics of the prevalence of arterial hypertension and its relationship with the main risk factors//Cardiovascular therapy and prevention. 2003. Vol. 2, No. 3. S. 356.
18. Naimova Sh., Umurova N. Renal comorbidity in rheumatic diseases // Bulletin of the Doctor. - 2020. - T. 1. - №. 3. - P. 137-140. [in Uzbek]
19. Aliakhunova M. Yu., Naimova Sh. A. Features of kidney damage at patients with rheumatoid arthritis // New day in medicine. – 2020. – no. 2. - P. 47-49.
20. Naimova Sh. A. The degree of secondary osteoporosis in rheumatological patients and ways of its prevention // New day in medicine. – 2020. – no. 1. - P. 56-58.