

INFLUENCE OF LONG-TERM APPLICATION OF ANTI-HYPERTENSIVE DRUGS AND CONDUCTING THE "SCHOOL OF HYPERTENSION" ON THE DEVELOPMENT OF RISK OF CARDIOVASCULAR COMPLICATIONS IN PATIENTS WITH ARTERIAL HYPERTENSION

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ABSTRACT

To assess the impact of long-term use of antihypertensive drugs and the "school of hypertension" on the development of the risk of cardiovascular complications and quality of life in patients with arterial hypertension, 610 patients with AH of 1–2 degrees were examined. The duration of hypertension was 6.8 ± 1.6 years. Of the 610 patients examined, 231 (37.9%) were patients with degree I hypertension (mean age of patients was 46.7 ± 7.0 years) and 379 (62.1%) - with degree 2 hypertension (mean age 49.1 ± 6.92 years). Patients with grade 1 hypertension began to take 10 mg of enalapril per day as monotherapy (Enap, KRKA, Slovenia). Patients with grade 2 hypertension were divided into 2 groups, taking into account risk stratification. Group 1 (medium risk) took 10 mg of enalapril per day, group 2 (medium and high risk) started taking enalapril 12.5 mg with hydrochlorothiazide - a fixed combination - Enap HL. Analysis of the results of the study showed that after 4 weeks of taking enalapril there was a decrease in blood pressure from $158.2 \pm 6.5 / 96.1 \pm 4.9$ to $142.2 \pm 7.1 / 88.1 \pm 5.9$ mm Hg. Art. ($p < 0.001$), 22% of patients reached the target blood pressure. At the same time, in the group taking Enap HL, blood pressure decreased from $159.6 \pm 6.4 / 97.5 \pm 3.8$ to $139.4 \pm 8.7 / 87.4 \pm 7.1$ mm Hg. Art. ($p < 0.0001$). Assessment of patients the occurrence of cardiovascular complications in patients with AH of 1 degree with a high risk of 16.9%, with a very high risk of 1.7%, and in patients with AH of 2 degrees, this condition was 33% and 12.4%, respectively.

KEYWORDS: arterial hypertension, cardiovascular risk, fixed combination, school-hypertension.

INTRODUCTION

Arterial hypertension (AH) is a leading risk factor for the development of cardiovascular (CV) (myocardial infarction, stroke, coronary heart disease (CHD), chronic heart failure), cerebrovascular (ischemic or hemorrhagic stroke, transient ischemic attack) and renal (chronic kidney disease (CKD)).^[1] The prevalence of hypertension in the adult population is 30–45%. The prevalence of hypertension does not depend on income level and is the same in low, middle and high income countries

Elevated blood pressure is the main factor in the development of premature death and cause almost 10 million deaths and more than 200 million disabilities worldwide.^[1,3] A SBP level ≥ 140 mmHg is associated with an increased risk of death and disability in 70% of cases, with the highest number of deaths during years associated with SBP are due to ischemic heart disease, ischemic and hemorrhagic strokes.^[4] Between blood pressure and the risk of cardiovascular diseases (CVD) there is a direct link. This relationship starts from

relatively low values - 110-115 mm Hg. Art. for SBP and 70-75 mm Hg. Art. for DBP.^[3] A direct relationship between elevated blood pressure and the risk of CV events 392 has been demonstrated for all age groups^[5] and ethnic groups.^[6] In 393 patients older than 50 years, SBP is a stronger predictor of events than DBP.^[5,7] High DBP is associated with an increased risk of CV events and is more often elevated in younger (<50 years) patients. DBP tends to decrease in the second half of life due to an increase in arterial stiffness, while SBP, as a risk factor, becomes even more important during this period.^[7] In middle-aged and elderly patients, increased pulse pressure (PP) (which is the difference between SBP and DBP) has an additional negative effect on prognosis.^[1,8]

Most deaths from CVD are preventable by eliminating or correcting the listed RFs. For active detection of CVDs or their RF, the population is screened, including those who consider themselves healthy. It should be emphasized that the definition of SSR should not occur once, but should be repeated over time, since SSR is a continuum. Because CVR is assessed when screening large populations, the tool for risk assessment needs to be simple and reliable. To assess CVR, various risk meters have been created, and they are specific for the countries in which they were developed taking into account national data on the prevalence of RF and mortality. Among the most famous risk meters are PROCAM (Germany), ASSIGN (Sweden), Framingham (United States of America (USA)), Q-RICK (UK), CUORE (Italy) and others. At the same time, international risk meters are used, which make it possible to obtain comparable data when assessing CCP. Since 2003, the European Recommendations for Cardiovascular Prevention suggest using the SCORE system based on 5 RFs, such as gender, age, SBP, total cholesterol concentration in blood, and smoking, to assess individual CV risk.^[9]

MATERIAL AND METHODS

The study included 610 patients with grade 1–2 AH who were observed in a 37-family polyclinic in Tashkent. The study included patients aged 35–65 years with newly diagnosed hypertension or not regularly taking antihypertensive drugs during the last month. During the study of patients, a complete history was collected, a physical examination was performed, blood pressure was measured by the Korotkov method, and ABPM was performed. The SCORE scale was used to assess the risk of CVD over 10 years. The questionnaire identified risk factors for hypertension (hereditary predisposition for hypertension, bad habits: smoking, alcohol, overweight, excessive salt intake). Body mass index (BMI) - Quetelet index: calculated by the formula weight (kg) / height (m). The duration of hypertension was 6.8 ± 1.6 years. Of the 610 patients examined, 231 (37.9%) were patients with degree I hypertension (mean age of patients was 46.7 ± 7.0 years) and 379 (62.1%) - with degree 2 hypertension (mean age 49.1 ± 6.92 years). Patients with

grade 1 hypertension began to take 10 mg of enalapril per day as monotherapy (Enap, KRKA, Slovenia). Patients with grade 2 hypertension were divided into 2 groups, taking into account risk stratification. Group 1 (medium risk) took 10 mg of enalapril per day, group 2 (medium and high risk) started taking enalapril 12.5 mg with hydrochlorothiazide - a fixed combination - Enap HL. After 4 weeks. If the target blood pressure level was not achieved (<140/90 mm Hg), the dose of Enap was doubled (20 mg / day). If monotherapy with enalapril did not allow reaching the target blood pressure level, then after 2 weeks. Enap HL was added to the treatment. The criterion for the effectiveness of antihypertensive therapy was a decrease in DBP by 10% or SBP by 10 mm Hg. Art. by 15 mm Hg. Art. from the original level. The target blood pressure level during therapy was considered to be the achievement of blood pressure <140/90 mm Hg. Art.^[4,5] All patients who achieved the target blood pressure level or an adequate antihypertensive effect (reduction in systolic blood pressure (SBP) and / or diastolic blood pressure (DBP) by less than 10% of the baseline) after 6 weeks of treatment continued to participate in the study for another 24 weeks. At all visits, the patients were monitored blood pressure, heart rate, patient complaints were recorded, side effects and adverse events, if any, were noted, a biochemical blood test (glucose, cholesterol, creatinine, urea AST, ALT) and electrocardiography (ECG) in 12 leads were performed initially and after 12, 24 weeks of treatment. The exclusion criteria were secondary forms of hypertension, acute cerebrovascular accident, and acute myocardial infarction within the last 6 months, angina pectoris II – III FC, heart failure, heart rhythm disturbances, liver and kidney dysfunctions.

RESULTS AND DISCUSSION

Blood pressure control is a key tool in achieving the main goal in the treatment of hypertension - reducing the risk of cardiovascular complications and improving prognosis. Recent studies on the effectiveness of different classes of antihypertensive drugs in preventing the risk of developing cardiovascular complications and death from them have shown that treatment with antihypertensive drugs (AHP) of any group reduces the risk of cardiovascular complications and death from them. The antihypertensive drugs used should have a prolonged effect, ensuring adequate blood pressure control during the day. Many studies completed in recent years have demonstrated that only strict control of blood pressure can reliably reduce the incidence of cardiovascular complications - MI, stroke, CHF in patients with hypertension. Based on the results of these studies, target blood pressure levels were determined. According to the recommendations of the European Society of Cardiology, the target BP level is recognized as BP values not exceeding 140/90 mm Hg. Art. Analysis of the results of the study showed that after 4 weeks of taking enalapril there was a decrease in blood pressure from $158.2 \pm 6.5 / 96.1 \pm 4.9$ to $142.2 \pm 7.1 /$

88.1 ± 5.9 mm Hg. Art. ($p < 0.001$), 22% of patients reached the target blood pressure. At the same time, in the group taking Enap HL, blood pressure decreased from 159.6 ± 6.4 / 97.5 ± 3.8 to 139.4 ± 8.7 / 87.4 ± 7.1 mm Hg. Art. ($p < 0.0001$). With Enap HL therapy, 58% of patients reached the target blood pressure. As a result, after 12 weeks of treatment, blood pressure in the Enap HL group was significantly ($p < 0.05$) lower (130.9 ± 7.2 / 82.1 ± 6.7 mm Hg) than in the group receiving Enap (135.9 ± 8.4 / 87.5 ± 6.9 mm Hg). After 24 weeks of observation, blood pressure in patients taking Enap was 130.6 ± 9.3 / 83.1 ± 6.8 mm Hg. Art. and 127.5 ± 9.0 / 83.9 ± 7.3 mm Hg. Art. in patients taking Enap HL ($p < 0.05$). Assessment of the total risk of death from CVD is currently a reliable tool for determining the probability of fatal events in the next decade and risk management.^[6,7] This methodology makes it possible to simply and reliably form groups of moderate, high and very high total risk, to differentiate the treatment and prophylactic tactics of maintaining and monitoring these groups of people, which, of course, contributes to an increase in the effectiveness of control. The analysis of the study results showed that among the examined patients, the occurrence of CVC in patients with AH of 1 degree with a high risk of 16.9%, with a very high risk of 1.7%, and in patients with AH of 2 degrees - this condition was 33% and 12, 4% respectively. The results of the study showed that 14.5% of patients with hypertension aged 40-49 years have a high risk. The number of patients with high-risk increases with age: at the age of 50-54, the risk doubles, at the age of 55-60, the risk increases by 2.8 times. Most women with CVD are at low risk for mortality within 10 years. Among men with hypertension, a negative predisposition is observed, for example, in patients with hypertension of 1 degree, a high risk was detected in 28.7% of patients and this indicator is 2.9 higher than in women. Men had a very high risk of 4.6% and this rate was not observed among women. In men with grade 2 hypertension, a high risk of death from CVD was observed in 45.5% of patients, which is 1.7 times more and more often than in patients with grade 1 hypertension. In men with grade 2 hypertension, a very high risk was observed in 15.8% of patients, this indicator is 1.6 times higher than in women ($P < 0.05$) and when compared with patients with grade 1 hypertension, it is 2.4 times higher ... Increasing treatment and prophylactic measures for hypertension and CVD, timely identification of groups of people with high and very high risk of death, makes it possible to detect CVD in time. When analyzing the results of taking antihistamines at week 24, we see a decrease in CVD risk indicators, from a very high risk by 1.5 and due to this, the number of patients with a low risk by 1.7, from 40.6% to 66.1%, increases. Along with this, we can register a 1.9 high risk reduction. This figure dropped from 26.9% to 13.7%. As a result of taking AGP, there is a decrease in blood pressure and HCM by 14.5%, which led to a decrease in CVR. Assessment of the final indicators associated with the degree of blood pressure reduction showed that in the group of patients with grade

1 hypertension who took antihistamines for 24 weeks, the risk index from a very high decreased by 2.1, and due to this, the number of patients with low risk increased. If before treatment, this indicator was 1.7%, then after AHP it was 0.9% and the number of patients with low risk, from 121 (52.4%), rose to 163 (73.1%). In this group of patients, the high risk of CVC decreased by 5-8%, from 16.9% of patients before treatment is 10.8% of patients. A similar dynamics was observed in patients with grade 2 hypertension; during treatment for 24 weeks, a very high risk of CVC remained in 9.1% of patients, and amounted to 47 patients before treatment, after treatment was 34 patients. This, in turn, led to an increase in low-risk patients from 127 (33.5%) to 234 (61.8%).

The risk indicators of CVC were studied in 204 patients enrolled in the "school of hypertension". The results showed that in this group of patients after training the number of patients with a very high risk decreased (from 15 patients to 8) and this risk was 7.4% versus 3.9%. This was characterized by an increase in the number of patients with low risk: the number of patients in this group increased (from 52 to 125 patients), from 25.5% to 64.1%. The number of patients with a high risk of CVC trained in this group from 49 (24%) and amounted to 21 (10.8%). In the development of CVO, the degree of blood pressure and risk factors for hypertension are of great importance. Thus, the risk of death from CVD is associated with the degree of AH and RF AH. When taking antihistamines and after studying at the "school of hypertension" in patients with a very high risk, there is a clear tendency to move from a high-risk group to a low-risk group. The most obvious result of educating patients with hypertension is increasing patient awareness of the disease, which creates the prerequisites for their active participation in the treatment process.

CONCLUSION

Thus, the use of an integrated approach - training patients with hypertension according to the educational program "school-hypertensive" along with the intake of antihypertensive drugs, timely detection and monitoring of groups of people with high and very high total cardiovascular risk of death using the SCORE scale helps to increase the effectiveness treatment-and-prophylactic measures for hypertension and CVD. Assessing the total risk of death from CVD is now a reliable tool for determining the likelihood of fatal events in the next decade and for managing the risk. This methodology makes it possible to simply and reliably form groups of moderate, high and very high total risk, to differentiate the treatment and prophylactic tactics of maintaining and monitoring these groups of people, which, of course, contributes to an increase in the effectiveness of control. Assessment of the quality of life of patients with hypertension showed that the quality of life of patients decreases mainly on the scales of physical activity, emotional state and social adaptation. Achievement of the target level of hypertension with the help of antihypertensive drugs leads to an improvement

in the quality of life, and education of patients in “schools for hypertensive patients”, together with an increase in the quality of life, improves indicators of physical activity and social adaptation.

REFERENCES

1. Franklin SS, Lopez VA, Wong ND, et al. Single versus combined blood pressure components and risk for cardiovascular disease: the Framingham Heart Study. *Circulation*, 2009; 119: 243-250.
2. Prevalence of risk factors for non-communicable diseases in the Russian population in 2012-2013. ESSE-RF research results. *Cardiovascular Therapy and Prevention*, 2014; 13(6): 4-11.
3. Chazova IE, Zhernakova Yu.V. On behalf of the experts. Clinical guidelines. Diagnostics and treatment of arterial hypertension. *Systemic hypertension*, 2019; 16(1): 6–31.
4. Williams B, Mancia G, Spiering W et al. 2018 ESC / ESH Guidelines for the management of arterial hypertension: The Task Force for the management of arterial hypertension of the European Society of Cardiology and the European Society of Hypertension: *JHypertens*, 2018; 36(10): 1953-2041.
5. Vishram JK, Borglykke A, Andreasen AH, et al, MORGAM Project. Impact of age on the importance of systolic and diastolic blood pressures for stroke risk: the MONica, Risk, Genetics, Archiving, and Monograph (MORGAM) project. *Hypertension*, 2012; 60: 1117-1123.
6. Brown DW, Giles WH, Greenlund KJ. Blood pressure parameters and risk of fatal stroke, NHANES II mortality study. *Am J Hypertens*, 2007; 20: 338-341.
7. Franklin SS, Khan SA, Wong ND, et al. Is pulse pressure useful in predicting risk for coronary heart disease? The Framingham heart study. *Circulation*, 1999; 100: 354-360.
8. Domanski M, Mitchell G, Pfeffer M, Neaton JD, Norman J, Svendsen K, Grimm R, Cohen J, Stamler J, MRFIT Research Group. Pulse pressure and cardiovascular disease-related mortality: follow-up study of the Multiple Risk Factor Intervention Trial (MRFIT). *JAMA*, 2002; 287: 2677-2683.
9. Reznik E.V. Nikitin I. G. New ACC / AHA and ESC / ESH guidelines for arterial hypertension (*Cardiovascular therapy and prevention*, 2018; 17(5): 105.