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HIGH NORMAL BLOOD PRESSURE AND MASKED HYPERTENSION, CLINICAL SIGNIFICANCE

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✓ ***Resume***

Highly normal blood pressure (HNBP) and masked hypertension are considered as high-risk factors for subclinical target organ damage and CVD development, but researchers note the untimeliness and complexity of diagnosing these phenotypes of hypertension in routine practice. One of the leading directions in solving the problem of timely diagnosis of HNBP and masked hypertension is further study of factors associated with their presence and consequences.

Key words: high, normal blood pressure, masked arterial hypertension, clinical significance.

ВЫСОКОЕ НОРМАЛЬНОЕ АРТЕРИАЛЬНОЕ ДАВЛЕНИЕ И МАСКИРОВАННАЯ АРТЕРИАЛЬНАЯ ГИПЕРТЕНЗИЯ, КЛИНИЧЕСКОЕ ЗНАЧЕНИЕ

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✓ ***Резюме***

Высокое нормальное артериальное давление (ВНАД) и маскированная артериальная гипертензия рассматриваются как факторы высокого риска субклинического поражения органов-мишеней и развития сердечно-сосудистых заболеваний, однако исследователи отмечают несвоевременность и сложность диагностики этих фенотипов артериальной гипертензии в рутинной практике. Одним из ведущих направлений в решении проблемы своевременной диагностики ВНАД и маскированной артериальной гипертензии является дальнейшее изучение факторов, связанных с их наличием и последствиями.

Ключевые слова: высокое, нормальное артериальное давление, маскированная артериальная гипертензия, клиническое значение.

YUQORI NORMAL QON BOSIMI VA NIQOBLANGAN GIPERTENSIYA, KLINIK AHAMIYATI

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✓ ***Rezyume***

Yuqori normal qon bosimi (YuNAB) va niqoblangan gipertenziya subklinik maqsadli organlarning shikastlanishi va yurak-qon tomir kasalliklarining rivojlanishi uchun yuqori xavf omillari hisoblanadi, ammo tadqiqotchilar muntazam amaliyotda gipertenziyaning ushbu fenotiplarini tashxislashning o'z vaqtida va murakkabligini ta'kidlaydilar. HNBP va niqoblangan gipertenziyani o'z vaqtida tashxislash muammosini hal qilishning etakchi yo'nalishlaridan biri ularning mavjudligi va oqibatlari bilan bog'liq omillarni yanada o'rganishdir.

Kalit so'zlar: yuqori, normal qon bosimi, niqoblangan arterial gipertenziya, klinik ahamiyati.

Relevance

Arterial hypertension (AH) is a serious medical and social problem and a challenge to public health due to its high prevalence and adverse impact on prognosis [15]. Today, more than one billion people in the world suffer from this disease and by 2025 this figure is expected to increase to 1.5 billion [9,23]. The presence of hypertension increases the risk of developing acute myocardial infarction by more than 2 times, and an increase in systolic blood pressure (BP) by 20 mm Hg increases the risk of stroke by 1.25 times, diastolic BP by 10 mm Hg - by 1.21 times [3].

Almost half of all deaths from cardiovascular diseases (CVD) are due to hypertension: in 2015, about 10 million deaths were associated with hypertension, 4.9 million with coronary heart disease (CHD), and 3.5 million with stroke [12].

Currently, more and more cardiovascular events, including myocardial infarction, stroke, and sudden cardiac death, occur in young and middle age, and an increase in the frequency of hospitalizations has been noted mainly in patients aged 35–44 years [19].

The low symptomatology of hypertension and the short period of time for examining a patient in an outpatient setting make the problem of timely diagnosis of hypertension, blood pressure control and selection of optimal treatment tactics extremely relevant.

The aim of the study. To study highly normal and masked arterial hypertension based on the study of the results of large-scale clinical trials.

Result and discussions

With high prevalence and low treatment efficiency, hypertension remains an uncontrollable factor that determines the risk of target organ damage at the population level and potentiates the development of associated clinical conditions. n the Russian Federation, due to the lack of control over the effectiveness of hypertension treatment, every fifth patient has a higher risk of cardiovascular complications and death [5]. A recent epidemiological study involving European countries showed that CVDs are responsible for more than 4 million deaths, which is 45% of total mortality. IHD and CVD were the leading causes of cardiovascular mortality (1.8 million and 1.0 million, respectively) [20]. In this regard, the problem of timely detection of the disease in patients who do not have clinical manifestations remains relevant.

To date, the following types of increased blood pressure have been identified: stable hypertension, “white coat” hypertension, and masked hypertension [2,17]. In addition, the classification of hypertension includes such a borderline condition as high normal blood pressure (HNBP) (previously “prehypertension”, PH).

The term PHT was proposed in 1950, when the Russian cardiologist G.F. Lang [13] associated a blood pressure level of 120-140 mm Hg (i.e. “normal” and “high normal” blood pressure) with a prehypertensive state, which later became synonymous with the term “near disease” [10]. In 2003, in the clinical recommendations of JNC 7, experts singled out PGT [11] (BP above 120-139/80-89 mm Hg), since in this category of people the probability of developing hypertension over 4-6 years increases twofold. In parallel, in the same year (2003), in the European recommendations for the diagnosis and treatment of hypertension, blood pressure levels were divided for the first time into optimal, normal, and high normal [25]. In 2007, experts from the European Society of Cardiology introduced the term PGT [14], and 5 years later, European and domestic experts proposed considering blood pressure as optimal, normal and high normal, which remains the case today [6,14].

According to many authors, a number of risk factors for the development of PGT are behavioral [7,8,9,16,18, 21, 24], and multiple atherogenic, proinflammatory and metabolic mechanisms are involved in the pathogenesis of PGT formation [12].

Alicea-Planas J. et al. conducted a study among 229 working-age residents of rural areas of Nicaragua. AG was detected in 20.7%; PGT - in 46.2% of individuals. 51.4% of patients were smokers, and more than one-third of the sample added additional salt to their food [7].

Iranian authors reported the main determinants of PTH to be age ($p<0.001$), overweight ($p<0.001$) and male gender ($p<0.001$) [8].

Data from a cross-sectional analysis of volunteers aged 20 to 40 years indicate that exercise capacity, as measured by peak VO2 uptake, was significantly lower in the HT group than in the normotensive group ($p<0.001$). Daily salt intake in volunteers with OGT was also higher than in individuals with normal BP ($p<0.001$). Multiple linear regression showed that the mean baseline SBP increased by 0.34 mmHg for every 1 kg of weight, and DBP by 0.25 mmHg for every year of age increase. Thus, in patients with OGT and high daily salt intake, low exercise tolerance was found, and excess weight and age were independent risk factors for increased SBP and DBP [16].

In a study by Parthaje P.M. et al. among 624 people aged 20 years and older, PGT was detected in 55%, and AG in 30%. PGT was more often recorded in men, representatives of the older age group, people with high socioeconomic status, obesity and less physical activity [18]. The link between PGT and obesity was confirmed in a study by Chinese scientists involving 5,297 men and 6,232 women aged 35 to 64 years. Visceral fat index was positively associated with AG and PTG for both sexes ($p<0.0001$). A similar positive association was observed between the visceral fat index/percentage body fat ratio and AG/PTG ($p<0.0001$) [21].

Yang G. et al. conducted a cross-sectional study involving 17,584 individuals using stratified, cluster, multistage, and random methods. The incidence of PTH and AG was 36.0% and 30.8%, respectively. With increasing age, the incidence of PTH decreased (p-trend <0.001), while hypertension increased (p-trend <0.001). Logistic regression analysis confirmed the association of PTH with alcohol consumption, abdominal obesity, hypertriglyceridemia, and hypercholesterolemia (p-trend <0.05) [24].

Today, the criteria for hypertension have been revised and, according to the updated recommendations of the American Heart Association, HNBP is currently considered as stage 1 hypertension [22].

Of particular concern is the low awareness of hypertension, high blood pressure and their possible complications among young and middle-aged people who, due to their busy schedules, do not subjectively feel an increase in blood pressure and do not seek help from a doctor. In addition, of considerable interest is “latent” or “masked” hypertension, in contrast to HNBP, which is more often associated with subclinical damage to target organs, one of the leading manifestations of which is atherosclerotic remodeling of the vascular wall.

Masked hypertension is considered when the average daily ambulatory BP level is ≥135/85 mmHg, or average daily BP is ≥130/80 mmHg, or average night-time BP is ≥120/70 mmHg with normal office BP and no complaints from the patient [1,4].

The incidence of masked hypertension varies in different countries from 8% to 49%, and with age, unlike HNBP, its prevalence decreases significantly due to the transformati Conen D. et al., based on an international database of 9550 individuals aged 50 years and younger without AHT, showed the incidence of masked hypertension in every fifth man (21.1%) and every tenth (11.4%) woman ($p<0.0001$) [11].on into stable systolic-diastolic or isolated systolic hypertension [1].

Conclusion

Thus, HNBP was previously considered as PGT, but as medical science developed, this term lost its existence, although it is still found in foreign sources. HNBP and masked hypertension are considered as high-risk factors for subclinical target organ damage and the development of CVD, however, researchers note the untimeliness and complexity of diagnosing these hypertension phenotypes in routine practice. One of the leading directions in solving the problem of timely diagnosis of HNBP and masked hypertension is further study of the factors associated with their presence and consequences.

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