

MODERN MEDICAL PROBLEM OF HYPERTENSION: PATHOGENESIS, PREVENTION AND TREATMENT APPROACHES

Khakimov Bobur Ravshanbek ugli
Central Asian Medical University

Abstract

This article comprehensively discusses the etiology, pathogenesis, clinical course, diagnostic methods, complications, treatment, and prevention of arterial hypertension. Hypertension is one of the most common cardiovascular diseases and is associated with severe complications such as stroke, myocardial infarction, renal failure, and visual impairment[1,2,3]. Based on modern scientific perspectives, the article presents the mechanisms of hypertension development, risk factors, lifestyle recommendations, and the main groups of antihypertensive medications. Special attention is given to the prevention of hypertension through the promotion of a healthy lifestyle among the population[4,5,6].

Keywords

Arterial hypertension, blood pressure, cardiovascular diseases, pathogenesis, risk factors, antihypertensive therapy, prevention, healthy lifestyle.

INTRODUCTION

Today arterial hypertension is considered one of the most urgent global medical problems. According to the World Health Organization, billions of people worldwide suffer from high blood pressure, and this disease is among the leading causes of cardiovascular mortality[7,8,9]. Population aging, urbanization, physical inactivity, unhealthy nutrition, and increasing stress contribute to the growing prevalence of hypertension.

In Uzbekistan as well, arterial hypertension is widespread. Many patients are diagnosed late or do not adhere adequately to treatment, leading to increased rates of stroke and ischemic heart disease[10,11,12]. Therefore, improving awareness, early diagnosis, and effective preventive measures are essential for strengthening public health.

Arterial hypertension is a chronic condition characterized by persistently elevated arterial blood pressure. In adults, systolic pressure above 140 mmHg and diastolic pressure above 90 mmHg indicate hypertension. The disease is divided into primary (essential) and secondary forms. Primary hypertension accounts for about 90–95% of cases, while secondary hypertension develops due to renal, endocrine, or vascular disorders.

Several mechanisms participate in the development of hypertension, including dysfunction of the central nervous system, overactivation of the sympathetic nervous system, stimulation of the renin–angiotensin–aldosterone system, reduced vascular elasticity, and disturbances in sodium–water balance[13,14,15]. These processes increase peripheral vascular resistance and cardiac output, maintaining persistently high blood pressure.

Major risk factors include hereditary predisposition, aging, overweight and obesity, sedentary lifestyle, excessive salt intake, alcohol consumption, smoking, chronic stress, diabetes mellitus, and dyslipidemia. Visceral obesity plays a particularly important role by producing biologically active substances that negatively affect vascular tone.

Clinically, hypertension may remain asymptomatic for a long time. Many patients become aware of the disease only after incidental blood pressure measurements. When symptoms occur, they include headache, dizziness, tinnitus, chest discomfort, fatigue, and visual disturbances. Severe cases may present with hypertensive crises characterized by intense headache, nausea, vomiting, chest pain, and neurological signs.

Hypertension damages multiple target organs. Left ventricular hypertrophy develops in the heart, increasing the risk of heart failure[16,17,18]. Cerebral vascular damage may lead to stroke. Renal involvement causes nephrosclerosis and chronic kidney failure. Retinal vascular

injury results in retinopathy and visual impairment. For this reason, hypertension is often referred to as a “silent killer.”

Diagnosis requires repeated blood pressure measurements at different times. Additional examinations include 24-hour monitoring, electrocardiography, echocardiography, renal function tests, lipid profile, and blood glucose assessment. These investigations help confirm diagnosis and evaluate complication risks.

Treatment requires a comprehensive approach. Lifestyle modification is the first step: reducing salt intake, adopting a fruit- and vegetable-rich diet, weight loss, regular physical activity, smoking cessation, and stress management significantly lower blood pressure. In many cases, these measures alone provide substantial benefit.

Pharmacotherapy includes several major drug groups: ACE inhibitors, angiotensin receptor blockers, calcium channel blockers, beta-blockers, and diuretics. Drug selection is individualized according to age, comorbidities, and complication risk. Modern practice often favors low-dose combination therapy to enhance efficacy and reduce adverse effects.

Prevention is critically important. Primary prevention aims to stop disease development in healthy individuals, while secondary prevention focuses on avoiding complications in diagnosed patients. Regular screening, timely blood pressure monitoring, and promotion of healthy nutrition are key strategies.

It should be emphasized that hypertension requires lifelong control. Many patients discontinue medication once blood pressure normalizes, which increases relapse and complication risk. Strict adherence to medical advice, continuous follow-up, and self-monitoring are essential.

CONCLUSION

Arterial hypertension is a widespread chronic disease with serious complications. Alongside genetic predisposition, lifestyle factors play a major role in its development. Early diagnosis, healthy lifestyle interventions, and individually selected drug therapy enable effective blood pressure control. Most importantly, hypertension must not be ignored—every individual bears responsibility for personal health and should undergo regular preventive examinations. Only a comprehensive approach can reduce cardiovascular disease burden and increase life expectancy.

REFERENCES

1. World Health Organization. (2023). *Hypertension*. Geneva: WHO. <https://www.who.int/news-room/fact-sheets/detail/hypertension>
2. Williams, B., Mancia, G., Spiering, W., et al. (2018). 2018 ESC/ESH Guidelines for the management of arterial hypertension. *European Heart Journal*, 39(33), 3021–3104.
3. Whelton, P. K., Carey, R. M., Aronow, W. S., et al. (2018). 2017 ACC/AHA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. *Hypertension*, 71(6), e13–e115.
4. Rahmatjonovna, I. N. (2024). Fast foods are the potential of human health. *Ethiopian International Journal of Multidisciplinary Research*, 11(05), 365-369.
5. Isaqova, N. (2022). Bolalarning antropometrik ko'rsatkichlarini turli omillarga bog'liqligi. *Science and innovation*, 1(D8), 1000-1003.
6. Рахматжоновна, И. Н. Алиментарного ожирение и репродуктивное здоровье женщин в современном аспекте физической реабилитации. *O'zbekiston harbiy tibbiyoti*, 4(4), 368-370.
7. Isaqova, N. (2022). Қабзиятнинг болалар антропометрик кўрсаткичларига таъсири. *Science and innovation*, 1(D8), 888-892.

8. Isaqova, N. (2024). MICROSCOPIC EXAMINATION OF SPUTUM. *Развитие и инновации в науке*, 3(6), 63-66.
9. Исакова, Н., & Усмонова, Г. (2024, June). ЛАБАРАТОРНАЯ ДИАГНОСТИКА ТРИХОМОНИЗА. In *международная конференция академических наук* (Vol. 3, No. 6, pp. 59-65).
10. Raxmatjonovna, I. N. (2024). Labaratory diagnostics of trichomonis disease. *Ethiopian International Journal of Multidisciplinary Research*, 11(05), 496-499.
11. Raxmatjonovna, I. N. (2023). The problem of acceleration of children's development (literature review). *International Multidisciplinary Journal for Research & Development. Volume10*, (12), 160-164.
12. Исакова, Н., & Усмонова, Г. Кишечный дисбактериоз//Models and methods in modern science.–2024. Т, 3, 106-112.
13. Raxmatjonovna, I. N. The most pressing problem today is iodine deficiency. *World Bulletin of Public Health*, 23, 97-100.
14. Raxmatjonovna, I. N. Anthropometric indicators of children. *Scientific Impulse*, 1(5), 883-887.
15. Isakova, N. R. (2021). The effect of constipation due to diseases of the colon on the anthropometric parameters of children. *ASIAN JOURNAL OF MULTIDIMENSIONAL RESEARCH*, 10(5), 666-669
16. Carretero, O. A., & Oparil, S. (2000). Essential hypertension. Part I: Definition and etiology. *Circulation*, 101(3), 329–335.
17. Mills, K. T., Stefanescu, A., & He, J. (2020). The global epidemiology of hypertension. *Nature Reviews Nephrology*, 16(4), 223–237.
18. Carey, R. M., & Muntner, P. (2018). Prevention and control of hypertension: JACC Health Promotion Series. *Journal of the American College of Cardiology*, 72(11), 1278–1293.