



## THE ISSUES OF HYPERTENSIVE CRISES IN THE WORLD

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**Abstract:** The article under discussion depicts issues of hypertensive crises in the world. The author of the article considers that hypertensive crisis usually occurs in people who already suffer from arterial hypertension (high blood pressure) and is manifested by a sudden increase in blood pressure. In most cases, HC is caused by lack of and/or improper treatment (irregular intake or insufficient doses of medication).

**Key words:** blood pressure, hypertensive crisis, risk factors, cardiovascular diseases, prognosis, peripheral vascular resistance, ischemia, clinical, population studies.

### Introduction

Hypertensive crisis is a serious clinical condition characterized by a sharp rise in blood pressure (BP). The danger lies in the high risk of damage to the target organs, which are the heart, eyes, kidneys and brain. Crisis condition is not a separate disease. However, in most cases it is a consequence of poorly controlled arterial hypertension.

### Main part

According to the prognosis of WHO experts a rapid growth of AH is expected by 2025, the number of patients will reach 1 billion 56 million, which is 29% of the adult population of the planet [2]. At present the most important place in the study of AH is given to epidemiological studies that allow determining the prevalence, risk factors, effectiveness of treatment, prevention of AH and its major complications [3, 5].

A joint study by the WHO and Imperial College London was published in the medical journal The Lancet. The experts collected and analyzed data on blood pressure in people aged 30 to 79 from 184 countries from 1990 to 2019. This is the largest study to date in the field.

According to the experts, people with high blood pressure are least likely to live in rich countries and most likely to live in middle- and low-income countries. The lowest rates of hypertension are in Switzerland, Peru and Canada; the highest rates among women are in the Dominican Republic, Paraguay and Jamaica; among men - in Hungary, Paraguay and Poland.

Belarus and Tajikistan are also among the top 10 countries with the highest proportion of males suffering from hypertension. There, hypertension was diagnosed in 52 percent and 51 percent of men, respectively.

Russia turned out to be in the top ten countries where the incidence of hypertension among women over 30 years has decreased significantly - by 12 percent. Uzbekistan, on the contrary, is among the countries where the corresponding indices have considerably grown among both women and men. According to the results of population studies, more than 26% of people over 40 years old in the Republic of Uzbekistan suffer from AH, which is the main cause of cardiovascular diseases, as well as brain and kidney disease, and is one of the main causes of death on the planet. According to the latest WHO data published in 2020, deaths from hypertension in Uzbekistan have reached 2,789 or 1.73% of total mortality. The age-adjusted mortality rate is 13.87 per 100,000 population, ranking Uzbekistan's 111<sup>th</sup> place in the world.

As the WHO notes, only 1 in 4 women and 1 in 5 men with high blood pressure take effective medications to keep it under control.

*"Even nearly half a century after we started treating hypertension, which is easy to diagnose and control with inexpensive medications, many people with high blood pressure are still not being treated, and that is a failure of the public health system,"* said Majid Ezzati, one of the study authors, a professor at Imperial College London [6].

In the world, most guidelines prefer a clinical classification based on the severity of clinical symptoms and the presence of complications. Based on this classification, the following are distinguished: 1) complicated hypertensive crisis - an emergency condition accompanied by target organ damage; can be fatal, requires immediate medical attention and urgent hospitalization in a hospital; 2) uncomplicated hypertensive crisis is a condition in which there is a significant increase in blood pressure with relatively intact target organs. It requires medical attention within 24 hours of onset; hospitalization is not usually required.

The ratio of total peripheral vascular resistance to cardiac output plays an important role in the development of hypertensive crisis. As a result of vascular dysregulation spasm of arterioles occurs, resulting in increased heart rate, a vicious circle develops and there is a sharp rise in blood pressure, and due to spasm many organs are in a state of hypoxia, which may lead to the development of ischemic complications.

It has been proved that in hypertensive crisis there is hyperactivity of renin-angiotensin system, which leads to a vicious circle, including vascular damage, increasing ischemia and, consequently, increased production of renin. It has been revealed that the reduction of vasodilator content in blood leads to the growth of total peripheral vascular resistance. As a result, fibrinoid necrosis of arterioles develops and vascular permeability increases. Extremely important in determining the prognosis and associated complications is the presence and severity of coagulation pathology [2].

During hypertensive crisis there are symptoms of impaired blood supply to organs and systems, most often the brain and heart:

- elevation of systolic blood pressure 40 mmHg above the working blood pressure;
- headache;
- shortness of breath;
- chest pains.

Neurological disorders: vomiting, seizures, impaired consciousness, in some cases blurred consciousness, strokes and paralysis.

Hypertensive crisis can lead to death. Hypertensive crisis can be particularly dangerous for patients with pre-existing heart and brain disease.

Intravenous medications such as nifedipine, clonidine are used to manage a complicated hypertensive crisis. During the first 2 hours, the average BP should be reduced by 20-25% (no more), no food should be eaten, then, during the next 6 hours - reduction of BP to 160/100 mm Hg. Further (in case of improvement of well-being) transfer to tablets. Treatment begins at the pre-hospital stage. Obligatory hospitalization in the hospital, in the intensive care unit.

Depending on the concomitant diseases, the therapy of hypertensive crisis may be different. Complications of hypertensive crisis: pulmonary edema, cerebral edema, acute impairment of cerebral circulation.

Eufillin 2.4% 5-10 ml intravenously, in 3-5 minutes Lasix (furosemide) 1% 2-4 ml Captopril 6.25 mg, further - 25 mg every 30-60 minutes orally until BP decreases (if no vomiting)

In seizure syndrome: Relanium (seduxen) 0.5% 2 ml intravenously, slowly. Magnesium sulfate 25 % 10 ml intravenously, by trickle in 5-10 min In left ventricular failure: Sodium nitroprusside 50 mg intravenously, by drip [4].

The prognosis in cases of complicated crises is unfavorable. 1% of patients with chronic arterial hypertension suffer from hypertensive crises. Once developed crisis has a tendency to relapse.

The mortality rate within 90 days after discharge from hospital among patients with hypertensive crisis is 8%. 40% of patients within 90 days after discharge from the hospital for hypertensive crisis are again admitted to the intensive care unit. While uncontrolled arterial hypertension is accompanied by a 2% 4-year mortality rate, patients with uncontrolled arterial hypertension with crises have a 17% 4-year mortality rate.

Uncontrolled arterial hypertension is the cause of hypertensive crises in 60% of cases, so effective treatment of hypertension is important. The prognostic course of hypertensive crises is poorly studied. In the presence of complications, the prognosis of the disease depends on the type of complication and the effectiveness of its therapy; in some cases, if untimely medical care is not provided, the outcome of the condition may be disability or death.

Prevention of hypertensive crises is divided into primary and secondary. Primary prevention of hypertensive crises is the prevention of the disease. Thus, this prevention should be adhered to by healthy people, those whose BP does not yet exceed normal numbers. The complex of health measures will not only help to keep blood pressure in normal range for many years, but also get rid of excess weight and significantly improve overall health.

Physical activity. Studies show that regular aerobic physical activity can be beneficial both for the prevention and treatment of arterial hypertension and for reducing cardiovascular risk and mortality. Studies have shown that even less strenuous and prolonged but regular physical activity is associated with a decrease in mortality of about 20%. Exercise aimed at endurance training (general strengthening, breathing exercises, exercising on simulators, swimming, walking, running, cycling) leads to a noticeable antihypertensive effect. It is recommended to devote 30 minutes a day to physical exercise, gradually increasing the load from mild to moderate (3-5 times a week). Static loads (lifting

weights, carrying weights, etc.), which provoke an increase in BP and blood cholesterol, are not recommended.

**Salt restriction.** Standard salt intake in many countries is 9 to 12 g/day. Its reduction to about 5 g/day (1 teaspoon) leads to a very modest reduction of BP (1-2 mm Hg) in persons with normal BP and gives a more pronounced effect (4-5 mm Hg) in patients with arterial hypertension. For this reason, salt intake of 5-6 grams per day is recommended for the general population. Salt restriction can lead to a decrease in the number of antihypertensive drugs and their doses. It should be considered that many products (cheeses, smoked meats, pickles, sausages, canned foods, mayonnaise, chips, etc.) themselves contain a lot of salt. So, removing the salt shaker from the table and never add salt to the food can prevent the disease. Low table salt content in foods of vegetable origin, fat-free cottage cheese, fresh or frozen fish.

**Limitation of animal fats.** It is recommended to consume more foods rich in potassium (apricots, prunes, raisins, beans, peas, sea cabbage, jacket-baked potatoes, lean beef, cod, mackerel, oatmeal, beets, radishes, tomatoes, green onions, currants, grapes, apricots, peaches, bananas, oranges); foods rich in magnesium (cereals, pulses, nuts, watermelon, carrots, beets, red pepper, seaweed, black currants); products rich in polyunsaturated and monounsaturated fats (vegetable oils, fish - salmon, mackerel, herring, mackerel, sardines, tuna, halibut, etc.), as well as fruits, berries, vegetables and legumes. Patients with arterial hypertension are recommended to use fish at least twice a week and 300-400 grams per day of vegetables and fruits.

**Smoking cessation.** Smoking is one of the main risk factors of atherosclerotic cardiovascular diseases. There is also evidence of the adverse health effects of secondhand smoke. Smoking causes an acute rise in BP and an increase in heart rate that persists for more than 15 minutes after smoking a single cigarette. It is known that hypertensive smokers have more pronounced structural and functional disorders of the vascular endothelium (the inner layer of blood vessels) in the wall of blood vessels. This leads to a sharp spasm of the vessel, loss of elasticity, development of aseptic inflammation in its wall and active thrombus formation. Clinically it is manifested by higher figures of BP, a frequent tendency to hypertensive crises, a greater likelihood of angina and myocardial infarction in hypertensive smokers.

**Decrease alcohol consumption.** Men with arterial hypertension, who drink alcohol should limit its intake to 20-30 g per day (for ethanol), and women with arterial hypertension - to 10-20 g per day. Total weekly alcohol consumption should not exceed 140 g in men and 80 g in women.

**Reduction of body weight.** Arterial hypertension is closely connected with excessive body weight, and a decrease in body weight is accompanied by a decrease in BP. To prevent the development of arterial hypertension in people with normal BP and to reduce BP in patients with arterial hypertension, it is recommended to maintain "healthy parameters" of body weight (BMI about 25 kg/m<sup>2</sup>) and waist circumference (less than 102 cm in men, less than 88 cm in women).

**Stress reduction.** The role of nervous mechanisms in the origin of hypertension is evidenced by the following factors: in the vast majority of cases it is possible to establish in patients in the past, before the disease, the presence of strong nervous "shocks", frequent disturbances, mental trauma. Experience shows that hypertension is much more common in people who are exposed to repeated and prolonged nervous overexertion. Therefore, one of the main targets of hypertension prevention should be the state of the nervous system. In the prevention of hypertension it is important not only to eliminate external

nervous overstrain or "trauma", but also to develop the internal ability to manage their "emotions". Forms must be found that would allow people to get out of emotional stress calmly, without paying for this "self-control" with their vessels. It is very important to master methods of psychological unloading - auto-training, self-infusion, meditation. It is important to strive to see positive sides of everything, to find joy in life, to work on his character, changing it in the direction of greater tolerance for other people's shortcomings, optimism and poise. Walking, sports, hobbies and communicating with pets also help maintain equilibrium.

Secondary prevention of hypertensive crises is carried out if the patient is diagnosed with arterial hypertension. Its main goal is to avoid the formidable complications of arterial hypertension (coronary heart disease, heart attack, brain stroke). Secondary prevention includes two components: non-medication treatment of hypertension and antihypertensive (drug) therapy.

Non-drug treatment corresponds to primary prevention, and may also include the use of hirudotherapy between crises.

### Conclusion

Hypertensive crisis is a severe form of arterial hypertension. It can occur at any time. It occurs more often in women than in men. The cause of the occurrence lies in a violation of the regulation of blood pressure. While arterial hypertension is common in 40% of the population, in only 1% of cases there can be a sudden jump from the baseline, which leads to a sharp deterioration of health with a high risk of death.

Prevention of hypertensive crisis consists of regular intake of hypotensive drugs. This allows you to control the normal blood pressure and general condition of the patient.

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