

## Comorbid Conditions in Patients with Arterial Hypertension and Its Treatment

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**ANNOTATION:** In recent years, the problem of multiple and comorbidity associated with common and socially significant pathologies of the cardiovascular system has increasingly attracted the attention of researchers, among whom arterial hypertension occupies one of the leading places. Patients with arterial hypertension usually have one or more concomitant pathologies. The most common comorbid diseases associated with arterial hypertension include: diabetes mellitus, metabolic syndrome, chronic kidney disease, chronic obstructive pulmonary disease, cerebrovascular diseases, etc. The presence of comorbidity in patients with arterial hypertension determines not only the choice of antihypertensive drugs, but also target values blood pressure. Patients with arterial hypertension and concomitant diseases require an individual approach, comprehensive diagnosis and treatment, taking into account all existing pathologies. The scientific review presented in the article is aimed at analyzing literature data on the study of the course and characteristics of the treatment of arterial hypertension in patients with comorbid pathology.

**Keywords:** arterial hypertension, cardiovascular system, analyzing, comorbid pathology.

Technological progress, improved medical care, and increased life expectancy have led to a steady increase in the number of patients with multiple diseases [1]. From domestic literature sources it follows that the frequency of combined pathology reaches 94.2%. It has been established that comorbid pathology is predominantly represented by a combination of two or three nosologies, but in isolated cases up to 6–8 diseases can be combined simultaneously in one patient. Comorbid pathology aggravates the course of the underlying disease, leads to changes in the typical clinical picture, and becomes the cause of the development of fatal complications. The study of combined pathology in recent years has been increasingly carried out, this is due to the complexity of diagnosis, the choice of a priority treatment strategy, the tactics of managing comorbid patients and the prevention of complications of combined diseases. Comorbidity affects not only the prognosis for life, but also increases the likelihood of death [2; 3].

The purpose of our study was to analyze literature data devoted to the study of the characteristics of the course and treatment of arterial hypertension (AH) in patients with comorbid pathology.

The most pressing problem of both national and world medicine in the modern world is diseases of the cardiovascular system (CVS). And, of course, the leader among this pathology is hypertension [4; 5], the prevalence of which in the world is 450–900 million adults, and in Uzbekistan - more than 35 million people. The annual mortality rate from associated diseases and complications is more than 3 million people worldwide [6]. In the practice of a therapist, hypertension occurs in 90% of cases of all possible combinations of diseases. Thus, a distinctive feature of hypertension is the high frequency of comorbidity [7; 8].

### ***Arterial hypertension and cerebrovascular disease***

The combination of AH and cerebrovascular disease (CVD) is an urgent problem of our time. This is due to the high prevalence of this comorbid pathology and significant medical and socioeconomic consequences. As it is known, the main modifiable risk factors (FR) of cardiovascular diseases (CVD) are smoking, diabetes mellitus (DM), AH and dyslipidemia, but the greatest importance, in particular for the probability of cerebrovascular disease (CVD) development, is high blood pressure (BP). Chronically elevated BP provokes structural changes in the vascular system and target organs, thus determining the development and progression of atherosclerosis and, consequently, cardiovascular complications: myocardial infarction (MI), cerebral stroke, etc.

Among the most important reasons for the development of chronic forms of cerebrovascular insufficiency, hemorrhagic and ischemic strokes due to pronounced changes in the structure and function of the cerebral vascular wall is AG. Both in men and women with age there is an increase in CVD, namely, the incidence of strokes is increasing. Strokes in our country still occupy leading positions in the structure of mortality [5; 6]. According to statistics, about 41% of women and 39% of men are characterized by a combination of AH and CVD. However, only in 20% of cases AH is controlled, and 5-6% of patients reach the target BP level. It is known that AH as a significant risk factor is the cause of cerebral stroke (70-80%). High BP affects not only the development of strokes and heart attacks, but also often causes the development of dementia. Both prevention and regular treatment of hypertension will reduce morbidity and mortality from possible complications [6].

### ***Arterial hypertension and chronic obstructive pulmonary disease***

AH and chronic obstructive pulmonary disease (COPD) is currently one of the frequent comorbid conditions in the clinic of internal medicine, and this combination leads to a high level of disability and death. But with this combination of diseases, a significant increase in the number of patients is not only due to the increasing incidence of AH and COPD, but also due to the increasing geriatric population of patients [9; 10].

AH occurs in 49.6-63.4% of COPD patients. At the age from 25 to 64 years COPD is detected in every fourth patient with AH. In this pathology, the risk of CVD development is 2-3 times higher. Researchers have recently paid more and more attention to the study of AH features in patients with different COPD phenotypes [11].

During the treatment of patients with AH and COPD, one should take into account the fact that most antihypertensive drugs, namely, beta-adrenoblockers (BABs), angiotensin-converting enzyme inhibitors (ACEIs) and bronchodilators can produce undesirable effects, leading to a more severe course of comorbid pathology [10]. Given these recommendations, the choice of antihypertensive therapy (AHT) should be made taking into account the pathogenesis of both AH and COPD. AGT drugs provide not only organoprotection and BP control during the day, but also reduce pulmonary artery pressure and have a bronchodilator effect. It should be noted that AGT does not adversely affect the drugs used for COPD treatment and does not worsen lung ventilation. AGT requires mandatory monitoring of external respiratory function and oxygen saturation [10].

### ***Arterial hypertension and chronic kidney disease (CKD)***

Numerous studies of different years have revealed a high prevalence of comorbid course of AH and CKD in the population [12]. In recent years, this problem has been complicated by the frequent combination of these diseases with metabolic disorders [13-15]. Since the kidney is a significant organ in BP regulation, it causes a close association of CHD with AH. It is known that kidney diseases are accompanied by an increase in BP. In turn, AH itself leads to organic changes in renal parenchyma with subsequent development of hypertensive nephroangiosclerosis. Most often the specific weight of CKD is higher in the cohort of patients with resistant and malignant AH. The incidence of resistant forms varies from 10 to 20%. A cross-sectional American study that included 470,000 subjects found that the prevalence of resistant AH was 15.4% [16].

The incidence of renovascular AH was approximately 3.9/1000 patient-years in persons over 65 years of age, or 6.9% of this population, and reaches 21% among patients with acute coronary syndrome [17]. Lesion of this particular vascular basin leads to increased cardiovascular mortality. Ultrasonography of renal arteries (sensitivity - 63%, specificity - 95%), spiral computed tomography (sensitivity - 88%, specificity - 80%) and magnetic resonance imaging (MRI) (sensitivity - 81%, specificity - 63%) are still the most important methods of noninvasive diagnosis of renovascular hypertension, but renal angiography remains the "gold standard" [18]. Consequently, the high prevalence of AH and CHD, as well as their mutual influence on each other, make the problem of nephrocardiac comorbidity a priority in AH [11].

### ***Arterial hypertension and rheumatoid arthritis***

Rheumatoid arthritis (RA) can be classified as a disease with a proven high cardiovascular risk. The high mortality from cardiovascular complications (CVD) in these patients is due to accelerated progression of atherosclerosis, development of chronic heart failure (CHF) and sudden cardiac death. Increase of cardiovascular mortality in RA is determined by accumulation of traditional CHD FRs, such as AH, dyslipidemia, smoking, etc., as well as by chronic inflammation, autoimmune disorders, which are the pathogenetic basis of this disease; side effects of antirheumatic therapy and insufficient attention to the prevention of CCO on the part of doctors and patients. Therefore, the development of effective measures to reduce cardiovascular risk in RA patients is an urgent task of modern medicine [19].

AH (59.6%) is detected with high frequency in RA patients. AH is most often diagnosed in patients (59.7%) against the background of RA. The incidence of AH depends on the duration of RA and disease activity. AH as the only risk factor is found in only 7% of RA patients. In the vast majority of patients, it is detected in combination with other FRs (dyslipidemia, visceral obesity, smoking, etc.), which increases the likelihood of target organ damage (atherosclerosis,

hypertrophy and remodeling of the left ventricular myocardium), so it is necessary to conduct simultaneous screening of all traditional FRs of CVD [20]

It is proved that AH is the most important modifiable FR not only in the general population, but also in RA patients. The presence of AH increases the risk of SSO development in RA by 3-6 times. The frequency of AH in RA is on average 50% higher than in the general population. Early formation of isolated systolic AH is noted as the most unfavorable factor in the development of SSO. Among the significant causes of BP increase in RA are: autoimmune disorders, chronic inflammation, hypodynamia, metabolic disorders, genetic factors and the use of antirheumatic drugs with potentially hypertensive effects [21].

### *Arterial hypertension and diabetes mellitus*

Due to the increasing pandemic of DM, cardiovascular comorbidity in patients with DM is an urgent problem. Globally, the number of patients with DM has more than doubled in the last 10 years, reaching 415 million by the end of 2015. By 2040, 642 million people will suffer from diabetes. In the Republic of Uzbekistan, the number of patients with DM is at least 245 thousand people (about 0.7-1% of the population). Systemic vascular complications: nephropathy, retinopathy, heart, brain and peripheral vessels of lower limbs - are serious consequences of the global epidemic of diabetes. Thus, the main cause of disability and mortality in patients with DM are the above complications [24].

The combination of AH and DM significantly worsens the prognosis for fatal and non-fatal SSOs. The key to successful management of such patients is effective control of BP and glycemia [7].

According to the European Society of Cardiology, all classes of AHT drugs can be prescribed in the combination of AH and DM, but preference is given to IAPs and ARAs, particularly in the presence of proteinuria/albuminuria [26]. Administration of these drugs in this category of patients requires special caution. Before administration, the glomerular filtration rate (GFR) and serum K<sup>+</sup> level should be assessed. If K<sup>+</sup> level >5.0 mmol/L, creatinine level >221 µmol/L (>2.5 mg/dL), or CRP <45 mL/min or systolic BP < 90 mm Hg, treatment should be started with the lowest dose of the drug [24]. The target BP level of 130/80 mmHg should be achieved in the presence of proteinuria/albuminuria and one or more cardiovascular risk factors, especially in young patients.

**Conclusion.** Summarizing the analysis of literature data devoted to the characterization of comorbid conditions in patients with AH, it should be noted that the combined course of arterial hypertension and other diseases, in general, aggravates life prognosis. In this situation, the thanatogenic potential of arterial hypertension is significantly increased and it is necessary to involve specialists of different profiles to modify cardiovascular risk. As can be seen from the presented review of scientific works, comorbid conditions in arterial hypertension have a wide prevalence, great prognostic value and determine the importance of a differentiated approach to the tactics of patient management.

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