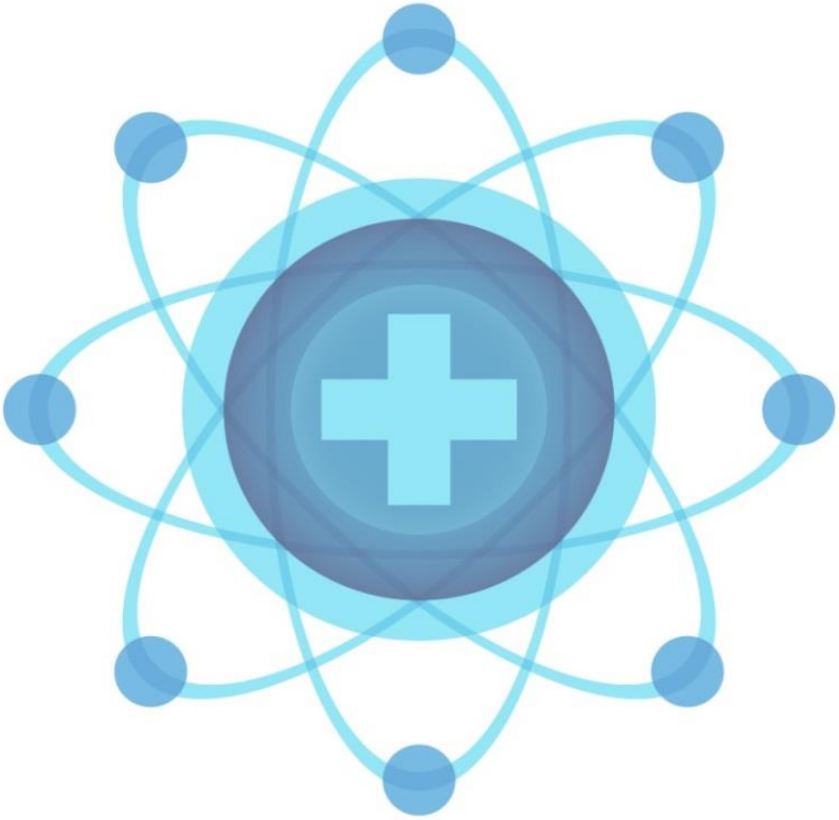

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ASPECTS OF CARDIOVASCULAR PATHOLOGY IN ELDERLY AND SENILE AGE

Literature review

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Abstract. In everyone world, especially in developed countries, increases absolute number and proportion of people elderly (> 65 years) and senile (> 75 years) age. By forecasts demographers and sociologists aging population will continue, and to 2025 G. number persons in age 60 years and older will increase in 5 once. It is known what this percent behind recent decades significant increased. One from important reasons this, along with with decrease fertility, is an improvement treatment cardiovascular diseases, constituents leading reason of death elderly persons. Most widespread among cardiovascular violations at elderly are arterial hypertension, ischemic disease heart , chronic cardiac failure. Before recent time used to opinion about need only symptomatic treatment cardiovascular diseases at elderly and elderly of people and about insignificant influence medical intervention on the forecast life in this age. Between topics large clinical research earnestly testify what age patients not is an hindrance to active medical and surgical treatment many CVD, but, necessary consider peculiarities treatment CVD at persons elderly and senile age.

Keywords: old age, old age, cardiovascular diseases, coronary heart disease, atherosclerosis, heart rhythm disturbances

Recently, more and more attention has been paid to the problems of gerontology. The aging process is a gradual involution of tissues and a violation of body functions. Symptoms of old age appear already at the end of the reproductive period and become more intense with further aging [3, 13, 24, 28, 34].

It has been shown that before 1930 in Europe the proportion of people who lived to 65 did not exceed 10%, today only healthy life expectancy in countries such as Great Britain and Germany is approaching 70 years, and in Spain it is 71 years. The world is rapidly aging, which specialists of various profiles do not get tired of talking about, and this is not only a blessing, but also a challenge to modern society, because creating and maintaining comfortable living conditions for the elderly is not an easy and costly task in every sense. The aging of the population all over the world, including Uzbekistan, has been going on for the past 30 years [21,27].

In the XX-XXI centuries, there was a change in mortality from infectious diseases all over the world, to death from non-communicable diseases, which by the end of the 20th century reached more than 90% of all causes of death. The most significant cause of mortality was cardiovascular diseases [4, 13,16, 29].

In this regard, it became necessary to classify the age groups of the population. The European Regional Office of the World Health Organization (WHO) in 1963 adopted the classification of age groups of the population, which is still valid

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throughout the world, and in Russia in particular. According to the age classification approved by the Congress of Gerontologists and Geriatricians, the entire population over 50 years of age is divided into four age categories: 1) mature age - 50-60 years; 2) old age - 61-74 years; 3) senile age — 75 years and more; 4) centenarians - 90 years or more [6, 13.18, 25, 31, 34]. At the same time, the characteristic features of the global aging of the population is an increase in the proportion of people over 75 among old people. The problem is that, at the same time, the number of people on earth is also increasing every year [4, 12, 17, 20, 30].

According to the UN, the proportion of people aged 60 and over in the world in 2015 was 20%, and by 2025 it will increase to 24%, by 2050 - up to one third. Share of the elderly population in Uzbekistan is close to the indicator of the most developed countries and significantly higher than in the middle developed countries. I am close to developed countries in terms of the dynamics of the share of the elderly population [1, 26, 27, 28] .

In the Republic of Uzbekistan, the average life expectancy as of March 2020, according to statistical data, is 74.6 years, while this figure for men is 71.4 years, and for women 76.2 year . Total share of people over 6 in the republics 5 years in relation to the total population of the country in 2020 amounted to 4.6 % [1, 26-28].

Due to the constant aging of the population, the number of patients older than 70 years has increased in the practice of doctors of many specialties. Therefore, knowledge of the geriatric aspects of cardiology is an important element of the practitioner's knowledge.

According to statistical reviews in Uzbekistan, cardiovascular diseases remain the main cause of death and disability [1, 26, 28] . It has been proven that in people over 70 years of age, cardiovascular diseases (CVD) are much more severe and lead to disability and death. An increase in age for every 5 years leads to an increase in mortality per 100 thousand of the population by 2–2.5 times [7, 16, 19].

Large clinical studies show that the patient's age is not an obstacle to active conservative and surgical treatment of many CVDs and IHD in particular. Moreover, since the absolute risk of cardiovascular complications in elderly patients is higher, treatment of CVD in this category of patients has a greater effect than in younger patients [9,48,123,137].

When examining elderly patients, seemingly contradictory patterns in the structure of identified comorbidities are revealed, however, with a more detailed analysis, such contradictions are easily explained and leveled. In particular, it turns out that the older age group of patients has fewer comorbidities [5, 7, 9, 10]. This is explained by the fact that the probability of surviving to old age with a large set of comorbidities decreases with age , i.e. Roughly speaking, "the fittest survive, or rather the healthy." In addition, it is widely known that a number of chronic diseases in the elderly are quite rare compared to a younger group of patients (in particular, this applies to duodenal ulcer) [19, 29]. Finally, against the background of ongoing treatment, many diseases acquire a different clinical form. So, with many years of treatment with antianginal drugs, angina pectoris passes from a painful form to a painless one, and the same thing happens with the angina pectoris clinic after

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normalization of blood pressure or after invasive or non-invasive revascularization [5, 6, 7, 9, 13, 27].

In elderly patients with severe forms of chronic coronary heart disease (CHD), conservative methods of treatment can not always provide adequate control of anginal symptoms of the disease and reduce the risk of coronary events. In such cases, interventional and cardiac surgery with myocardial revascularization are non-alternative methods of choice. They are the "gold" standard in the treatment of patients with severe forms of CIHD and not only relieve them of anginal symptoms, but also increase survival [6, 7, 9, 13, 17]. In this regard, there are data according to which the authors argue that the operations of choice for patients of older age groups are endovascular methods, which have a minimal operational risk, and also reduce the risk of developing acute myocardial infarction (MI) in the late postoperative period [1, 19, 25].

The high risk of disability and mortality among the elderly is primarily due to both the decrepitude of the body as a whole and the more common comorbidities in these patients (severe arterial hypertension, chronic kidney disease, chronic obstructive pulmonary disease, diabetes mellitus, peripheral arterial disease). , anemia, etc.) against the background of significantly reduced functional reserves of the heart, caused by (repeated) myocardial infarctions and long-term ischemia. These factors primarily determine the severity of the initial state of these patients [10, 16, 32, 34].

As a rule, elderly and senile patients, many of whom live in conditions of social and psychological adaptation, have one or more concomitant diseases, each of which requires an assessment of the severity and selection of therapy. On the other hand, such " polymorbidity " is associated with difficulties in diagnosing and treating diseases, as well as their assessment in terms of the risk of complications [4, 8, 15, 16, 17, 19, 26]. In other words, in elderly and senile patients against the background of involutionary processes, long-term, often previously undiagnosed chronic diseases that occur atypically are detected.

Numerous data from various invasive and non-invasive studies show that with age, protein-lipid dystrophy of myocytes develops in the heart muscle , which is expressed by progressive myocardial sclerosis, focal dystrophy of muscle fibers, and an increase in the content of low-elastic connective tissue. This leads to a gradual decrease in myocardial contractility, expansion and negative remodeling of the heart cavities and, ultimately, to the development of heart failure [3, 5, 16, 20, 21].

According to numerous studies, in elderly and senile patients, dilatation of the heart chambers, left ventricular myocardial hypertrophy, and pulmonary hypertension are often detected. All this leads to a decrease in the functional reserves of the myocardium and a decrease in cardiac output [2, 4, 13, 14, 24, 28].

In the elderly and senile age, involutional processes occur in the myocardium, expressed in a decrease in the rate of electrolyte energy exchanges, which significantly reduces the adaptive capabilities of the heart of an elderly person. So, the threshold of influence of the sympathetic nervous system increases and the inotropic effect of catecholamines decreases. As a result, myocardial contractility

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decreases, as well as the potential of the entire cardiovascular system. Ambler G. et al . believe that this can explain such a high percentage (90.6%) of the need to include inotropic support in treatment tactics in elderly patients [10, 17, 25].

Electrolyte imbalance in the myocardium, expressed in a decrease in the level of potassium ions and an increase in the level of calcium and sodium ions, often leads to various arrhythmias in elderly patients, in particular, sinus node dysfunction, ventricular extrasystole and atrial fibrillation [12, 16, 19, 20].

In elderly and senile patients, slowing down of electrolyte metabolism leads to disturbances in the processes of repolarization and depolarization in myocytes . Against this background, there is a slowdown in the spread of excitation along the conduction pathways from the atria to the ventricles, and the duration of cardiac systole increases. Such violations are described by T. Strasser et al . according to their data, rhythm disturbances after cardiac surgery are based on degenerative changes in the cells of the atrioventricular junction, in the fibers of the common trunk, especially the left bundle branch, rhythm and conduction disturbances are detected in 85.4% of elderly patients [16, 20, 28, 30] .

As a rule, elderly patients already initially have arrhythmias, which are most likely as a result of long-term myocardial ischemia or due to the presence of extensive post-infarction scars, or occur against the background of existing sclerosis processes in the conduction tracts of the heart. The most dangerous arrhythmias are atrial fibrillations, which account for 20 to 40% of all arrhythmias [4, 13, 14, 27]. Ventricular arrhythmias (VA) are more common, the most likely cause of which is chronic ischemia, acute injuries, electrolyte and metabolic disorders, as well as the use of cardiotonic support, hemodynamic instability and low cardiac output [5, 9, 13, 17]. VA is usually temporary and often tolerated without significant complications; however, in elderly patients with a decrease in ventricular myocardial contractility, it is associated with a significant increase in mortality [10, 29, 31].

With the aging of the body in large arterial vessels, such structural changes as intimal sclerosis, atrophy of the muscle layer, as well as a decrease in the number of elastic and an increase in the number of collagen fibers occur. As a result, the elasticity of the vascular wall decreases and its rigidity increases. Such changes occur against the background of a decrease in the number of functioning capillaries per unit tissue volume [2, 4, 7, 8]. In such tissues, the intensity of transcapillary metabolism decreases, their oxygen supply is disrupted, which leads to chronic tissue hypoxia. This is explained by electron microscopy data: with age, the basement membrane of capillaries thickens, collagenization of fibrils occurs, an increase in pore diameter, and a decrease in the activity of pinocytosis . The result of the described processes is the loss of elasticity of large arteries and an increase in energy consumption for the activity of the heart. As a result, compensatory LV hypertrophy and an increase in myocardial mass occur [9, 18, 21, 26].

In older patients with IHD, multifocal stenosing atherosclerosis is especially common, involving several coronary arteries (CA) in the process and spreading to the distal segments of vessels, which sharply reduces the possibilities of angioplasty and stenting of such arteries [16, 31,33].

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The disorders described above are often combined with atherocalcinosis of the aorta and valvular apparatus, which causes the risk of developing hydraulic damage to the valvular apparatus, which in turn leads to hemodynamic disruptions and, accordingly, to the development of complications, the main of which are the appearance of regurgitant flows and the formation or aggravation of valvular dysfunction [34] .

On the other hand, an important aspect of the development of CVD is the fact that in elderly patients, most of the vessels of the body are subject to the atherosclerotic process. Changes are found not only in the coronary arteries, but also in the arteries of the lower extremities, in the vessels of the brain, mesenteric , renal, hepatic, and other vessels. Diffuse damage to the cerebral vessels leads to chronic cerebral ischemia, which leads to changes in the central nervous system such as limited short-term memory, deterioration in executive functions, and a decrease in the pace and speed of mental activity [1, 16, 18, 24, 34].

Lesions of the vessels of the lower extremities in elderly patients are often represented by obliterating atherosclerosis of the arteries of the lower extremities [18, 33].

Elderly patients also have involutional changes in the bronchopulmonary system. Morphologically, this is manifested in an increase in the number of mucous membranes and a decrease in ciliated cells; in the wall of bronchioles, the number of elastic fibers decreases. The result of these morphological changes is a decrease in the activity of surfactant (a surfactant containing phospholipids), worsening of bronchial patency, an increase in early airway closure volume and residual air volume. And due to the decrease in the alveolar-capillary surface, there is a decrease in the physiological response to hypoxia. The mobility of alveolar macrophages and neutrophils slows down, and microbial colonization of the respiratory mucosa increases. As a result, the purification of the tracheobronchial tree is disturbed, which is characterized by the so-called mucociliary clearance, bronchial patency is disturbed, stagnation of bronchial secretion in the bronchial tree occurs, and conditions are created for the development of pneumonia [3, 8, 19, 28].

A negative contribution to the development of pathological processes is made by a decrease in the mass of elastic fibers in the lung tissue, which occurs not only due to involutional processes, but also under the influence of long-term adverse external influences, such as smoking and respiratory infections. Such destruction of the skeleton of the lung tissue leads to emphysema, which is accompanied by a loss of elasticity of the lung tissue and a deterioration in bronchial patency. Against this background, the alveoli are destroyed, the capillaries surrounding them become empty, the alveolar-capillary surface decreases and the diffusion capacity of the lungs decreases, and arterial hypoxemia develops. A decrease in surfactant activity with aging contributes to an increased tendency to microatelectasis , which can also be of great clinical importance in the development of bronchopulmonary infections [24, 34].

With age, there are also changes in the tissues of the kidneys. This is characterized by a decrease not only in the number of glomeruli and nephrons, but

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also by a decrease in their size, filling the intercellular space with connective tissue fibers. At the same time, the basement membrane thickens, the length and volume of the renal tubules increase. The result of the described processes is a decrease in renal blood flow, a decrease in the glomerular filtration rate. At the same time, the concentration of creatinine in the blood can remain within normal values, and the concentration function of the kidneys decreases. These features should be taken into account when determining the nitrogen excretion function of the kidneys [9, 13, 22, 24, 25]. Despite the fact that the functional reserves of the kidneys in elderly patients, under normal conditions of life, it is enough to maintain the homeostasis of the body at the physiological level, in extreme conditions or even close to them, their compensatory capabilities may not be enough, which, as a rule, leads to the development of acute renal failure of varying severity [9 , 16].

With age, carbohydrate metabolism worsens as a result of a violation of the insulin-producing function of the pancreas and the development of insulin resistance. In the pancreas of the elderly, perivascular fibrosis develops inside and between the lobular vessels, which leads to a decrease in the blood supply to the organ. The secretory function is disturbed, and the insulin-producing apparatus undergoes changes. According to the European Group for the Study of Insulin Resistance, with age, these changes lead to a decrease in the ability to insulin-stimulated glucose uptake by tissues, which in turn leads to type 2 diabetes mellitus (DM), which, according to published data, in patients older than 65 occurs from 18 -40% [3, 5, 15, 25, 26, 27]. DM, in turn, leads to more severe atherosclerotic changes in all vessels (diabetic angiopathy) and in particular the coronary arteries. Disturbances in carbohydrate metabolism during aging often lead to obesity and hyperlipidemia [3, 5].

Thus, with age, changes occur in all organs and tissues, which is associated with the aging process. The given pathophysiological changes in an aging organism may not always be a pathology at the start, but they inevitably contribute to the development of pathological processes, which can significantly increase the risk of non-fatal and fatal complications.

It is important to note that the use of CVD therapeutic tactics can significantly improve the quality of life and freedom from the clinical manifestations of angina pectoris and reduce the risk of developing myocardial infarction both in the immediate and long-term periods. However, obtaining a good result largely depends both on the correct, optimal treatment, taking into account all concomitant diseases, and on the adherence of patients to the selected therapy . The literature sources often contain conflicting opinions regarding approaches to the treatment of elderly patients, and the current conservative attitude towards the contingent of patients under consideration does not allow full use of the possibilities of modern methods of treatment, including surgery.

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