

Frequency of Comorbid Conditions in Chronic Heart Failure

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ANNOTATION

To study comorbid conditions in patients with chronic heart failure (CHF) living in regions with a hot climate, 323 patients were examined, including 150 men (46.43%), and 173 women (53.56%) aged under and over 60 years. Analyzes showed that in groups of patients with low hemoglobin albuminuria was detected in 35.6% of cases and the absence of anemia in 24.3% ($p < 0.05$). Blood creatinine in patients under 60 years of age was 74.9 ± 17.7 and in 60 years and older 98 ± 21.9 $\mu\text{mol} / \text{l}$, there was an increase in the indicator depending on the CHF FC, which amounted to I-FC- 83.2 ± 2.8 , II-FC 101 ± 3.8 , III-FC 128 ± 5.4 , IV-FC 138.9 ± 9.1 $\mu\text{mol} / \text{l}$ ($p < 0.05$). Thus, in patients with CHF, the incidence of comorbidity increases in proportion to the increase in age and functional class of chronic heart failure.

KEYWORDS: *comorbidity, chronic heart failure, ischemic heart disease, chronic kidney disease, functional class, fibrosis markers, anemia, creatinine, albuminuria.*

Introduction. Experts of the World Health Organization consider the increase in the prevalence of chronic diseases as a global epidemic of the 21st century [6,25]. Among them, a special place is occupied by coronary heart disease (CHD) and arterial hypertension (AH), as the causes most often leading to chronic heart failure (CHF). It is well known that in connection with the introduction of new modern treatment and prevention methods, as well as an increase in the proportion of elderly and older patients, the number of patients with CHF is increasing [1,6,7,14,15]. It should be noted that with the improvement in the quality of life and its duration, the proportion of coronary artery disease and hypertension and associated CHF will certainly increase. According to the American Heart Association (AHA), CHF was listed as the leading cause of death in 283,000 people in 2008 and represents a new epidemic of cardiovascular disease (CVD), affecting more than 23 million people worldwide, and the economic costs associated with CHF are estimated at billions of dollars per year [3,23,18].

A characteristic feature of the modern treatment and diagnostic process for chronic diseases, which include CHF, is the presence of a combination of several pathological conditions in a patient, i.e. comorbidity, which in recent years has received special attention, and most often it is a comorbidity in a patient, and not in any disease [2, 8]. According to European studies, the risk of developing CHF is especially high in the presence of both coronary heart disease (CHD) and diabetes mellitus (DM) [5,18]. According to various researchers, the presence of high comorbidity leads to an increase in mortality in patients with a chronic disease, a decrease in the quality of life, and social exclusion [6,11,13].

Initially, the term "comorbidity" (lat. co - "together" and morbus "disease") was proposed by Feinstein A.R. This concept characterizes the presence of an additional clinical picture that already exists or has appeared independently, in addition to the current disease and always differs from it [3,12,16].

The prevalence of comorbidity varies significantly and significantly depends on the sample parameters (patients, doctors, and clinics, sex of patients, age, adherence of researchers to different classifications of diseases), but in general, there is an increase in the frequency of comorbidity with age, mostly in women [1,9,17,20]. According to M. Fortin, based on an analysis of 980 case histories taken from the daily practice of a family doctor, the prevalence of comorbidity ranges from 69% in young patients (18-44 years old) to 93% among middle-aged patients (45-64 years old) and up to 98% - in patients of the older age group (over 65 years). At the same time, the number of chronic diseases in one patient varies from 2.8 in young patients to 6.4 in older people [4, 26].

The most significant (92%) proportion of patients with comorbidity is detected among patients with CHF, and the most common combinations of diseases include diabetes, ischemic heart disease, anemia, as well as hypertension, obesity, and hyperlipidemia. At the same time, comorbidity cannot be described using several simple combinations of diseases, which also do not reflect differences in the severity of the condition, the impact on the level of physiological and mental functions, and disability [10, 24].

Purpose of the study. To study comorbid conditions in patients with CHF living in regions with a hot climate.

Materials and research methods. We examined 323 patients who were hospitalized in the cardiology department of a multidisciplinary hospital in Bukhara. Among the examined patients there were 150 men (46.43%), and 173 women (53.56%). All patients had CHF and were divided by age into 2 groups up to 59 years old - 161 people and the second group - 162 people over 60 years old. The average age in group 1 was 52.55 ± 6.42 years, in group 2 67.56 ± 6.7 years ($p < 0.01$). CHF was diagnosed and assessed according to the New York Heart Society guidelines. All patients underwent general clinical and laboratory examinations, and ECG, and the results were processed according to the standard method. In addition, patients were interviewed using the Minnesota Questionnaire.

Results of the study and their discussion. According to the functional class (FC), the patients were distributed: I FC - 26.93%; II FC - 50.51%; III FC - 22.29%; IV-0.26%. The average body mass index in the first group up to 60 years old was 29.4 ± 4.9 , in the second group over 60 years old it was 28.1 ± 4.5 .

All patients had comorbid conditions. So with one concomitant diagnosis, there were 43 patients - this amounted to 13.31% of patients, with two concomitant diagnoses 214 patients, which amounted to 66.25%. With three concomitant pathologies - 56 patients, which accounted for 17.33% of patients. 9 patients had 4 or more comorbidities, accounting for 2.78%. On average, the overall comorbidity averaged 2.1 ± 0.67 , in the group under 60 years old 1.9 ± 0.53 , over 60 years old - 2.2 ± 0.75 ($p < 0.01$).

When assessing comorbidity by functional classes, it was found that in patients with FC 1 among 87 people, comorbidity was 1.74 ± 0.61 , in patients with FC 2 in 164 patients it was 2.1 ± 0.57 in patients with FC 3 among 72 patients comorbidity was 2.54 ± 0.65 . The analysis showed that with age and an increase in the FC of CHF, the frequency of comorbid conditions increases in parallel and is most often diagnosed in older age groups with FC III of CHF.

Patients were divided into two groups depending on blood hemoglobin parameters. In the first group, hemoglobin values were 112.4 ± 10.2 , in the second group, hemoglobin was 134.9 ± 8.9 ($p < 0.05$). The average age of patients with anemia was 64 ± 10.1 years and with normal hemoglobin values was 57.9 ± 9.1 years ($p < 0.05$). The study of hemoglobin parameters depending on the CHF FC showed the following: I-FC - 139.9 ± 16.8 , II-FC - 118.5 ± 19.7 , III-FC - 112.2 ± 14.5 , IV-FC - 102.5 ± 10.2 ($p < 0.05$) The analysis showed that anemia is often diagnosed in older patients with CHF and the frequency

increases depending on the FC of the disease.

Therefore, to study kidney dysfunction in patients with CHF, we analyzed the number of patients with albuminuria and creatinine levels in the blood. The frequency of occurrence of albuminuria in CHF patients examined by us was studied depending on age, FC, and the presence of anemia.

If albuminuria was detected in 24.8% of patients under the age of 60 years, then in older age categories it occurs in 35.1% of patients ($p < 0.01$). This confirms that kidney dysfunction in patients with CHF increases with age. In 323 patients with CHF, based on FC and age, the incidence of albuminuria was studied. At the same time, it was revealed that the age of patients with I-FC was 54.8 ± 9.3 , II-FC 54.4 ± 10.3 , and III-FC 64.5 ± 9.9 years.

Analyzes showed the presence of albuminuria in patients with I-FC in 12.3% of cases, II-FC in 18.5% of cases, and III-FC in 29.1% of cases.

In patients with CHF, as FC increases, the number of patients with albuminuria increases in parallel, which corresponds to the literature data.

Also, in the observed group of patients, the incidence of albuminuria was studied depending on the hemoglobin parameters. Analysis of data in groups of patients with low hemoglobin albuminuria in 35.6% of cases, in the absence of anemia 24.3% ($p < 0.05$). Indices of blood creatinine in patients under 60 years of age were 74.9 ± 17.7 and in patients aged 60 and over 98 ± 21.9 $\mu\text{mol/l}$ ($p < 0.05$).

In a comparative analysis of this biochemical indicator, depending on the presence of anemia, the following was revealed: with hemoglobin 112.43 ± 12.0 g/l, creatinine was 119.64 ± 13.7 $\mu\text{mol/l}$ and with hemoglobin 134 ± 9 g/l, this indicator was equal to 89.6 ± 8.5 $\mu\text{mol/l}$ ($p < 0.01$).

Based on FC, when comparing creatinine parameters, it was in patients with I-FC 83.2 ± 2.8 , II-FC 101 ± 3.8 , III-FC 128 ± 5.4 , IV-FC 138.9 ± 9.1 $\mu\text{mol/l}$.

Analyzes of patients with CHF showed that with increasing age and FC, blood creatinine levels increase, and the process is aggravated in the presence of comorbid pathology, which confirms the presence of impaired renal function in a certain number of patients observed by us.

Findings. CHF often occurs with comorbid conditions, among which anemia and dysfunction with an increase in chronic kidney disease are most often diagnosed.

The presence of renal dysfunction is confirmed by a large number of patients with proteinuria and high levels of blood creatinine.

The incidence of comorbidity increases in proportion to the increase in age and functional class of chronic heart failure.

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