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STUDY OF FREQUENCY INDICATORS OF COMORBID STATES AT DIFFERENT FUNCTIONAL CLASSES OF HEART FAILURE

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ABSTRACT

In order 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%), 173 women (53.56%) aged up to and older 60 years. Analyzes showed in groups of patients with low hemoglobin albuminuria was detected in 35.6% of cases, in the absence of anemia 24.3% ($p < 0.05$). Blood creatinine indices in patients under 60 years old was 74.9 ± 17.7 and in 60 years old and older $98 \pm 21.9 \mu\text{mol} / \text{l}$, an increase in the indicator was noted depending on the FC of CHF, amounted to I-FC- 83.2 ± 2 , 8, II-FC 101 ± 3.8 , III-FC 128 ± 5.4 , IV-FC $138.9 \pm 9.1 \mu\text{mol} / \text{L}$ ($p < 0.05$). Thus, in patients with CHF, the incidence of comorbidity increases in proportion to the 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 from the World Health Organization consider the increase in the prevalence of chronic diseases as a global epidemic of the 21st century [6,15]. Among them, a special place is occupied by ischemic heart disease (IHD) and arterial hypertension (AH), as the causes most often leading to chronic heart failure (CHF). It is well known that due to the introduction of new modern therapeutic and prophylactic methods, as well as an increase in the proportion of elderly and older patients, the number of CHF patients is increasing [1,6,7,14,15]. It should be noted that with an improvement in the quality of life and its duration, the proportion of ischemic heart disease and hypertension and associated CHF will certainly increase. According to the American Heart Association (AHA), CHF was named 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

citizens worldwide, and the economic costs associated with CHF are estimated at billions of dollars per year [5,9,18].

A characteristic feature of the modern diagnostic and treatment process for chronic diseases, which include CHF, is the presence of a combination of several pathological conditions in the patient, i.e. comorbidity, which has received special attention in recent years, while most often we are talking about comorbidity in a patient, and not with 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 chronic disease, a decrease in the quality of life and social maladjustment [6,11,13]

Initially, the term "comorbidity" (Latin *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 is always different from it [3,12,16].

The prevalence of comorbidity varies significantly and significantly depends on the parameters of the sample (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's data, based on the 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 people (45-64 years old) and up to 98% - in patients of the older age group (over 65 years old). Moreover, the number of chronic diseases in one patient varies from 2.8 in young patients to 6.4 in older people [4, 15].

The most significant (92%) proportion of patients with comorbidity is found among patients with CHF, and the most common combinations of diseases include diabetes mellitus, 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 effect on the level of physiological and mental functions, and disability [10, 14].

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

MATERIAL AND METHODS

We examined 323 patients who were inpatient treatment in the cardiology department of a multidisciplinary hospital in Bukhara. Among the examined patients there were 150 men (46.43%), 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 in accordance with the recommendation of the Heart Society of New York. All patients underwent general clinical and laboratory examinations, ECG and the results were processed according to the standard method. In addition, patients were interviewed using the Minnesota Questionnaire.

RESEARCH RESULTS AND 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%. Body mass index on average in the first group under 60 years old was 29.4 ± 4.9 , in the second group over 60 years old - 28.1 ± 4.5 .

All patients had comorbid conditions. Thus, there were 43 patients with one concomitant diagnosis - this amounted to 13.31% of patients, with two concomitant diagnoses - 214 patients, which amounted to 66.25%. With three comorbidities - 56 patients, which amounted to 17.33% of patients. In 9 patients, there were 4 or more concomitant pathologies, accounting for 2.78%. On average, the general 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 evaluating comorbidity by functional classes, it was found that in patients with 1 FC among 87 people, the comorbidity was 1.74 ± 0.61 , in patients with 2 FC in 164 patients it was 2.1 ± 0.57 in patients with 3 FC among 72 patients comorbidity was 2.54 ± 0.65 . The analysis showed that with age and an increase in CHF FC, the frequency of comorbid conditions increases in parallel and is most often diagnosed in older age groups with III-FC CHF.

The patients were divided into two groups depending on the parameters of blood hemoglobin. In the first group, hemoglobin indices 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 those with normal hemoglobin values were 57.9 ± 9.1 years ($p < 0.05$). The study of hemoglobin indices depending on the FC of CHF showed the following: with I-FC - 139.9 ± 16.8 , with II-FC - 118.5 ± 19.7 , with III-FC - 112.2 ± 14.5 , with 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, in order to study renal dysfunction in patients with CHF, we analyzed the number of patients with albuminuria and blood creatinine levels. We studied the incidence of albuminuria in the examined patients with CHF, depending on age, FC, the presence of anemia.

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

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

In patients with CHF, with an increase in FC, 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% ($p < 0.05$). The blood creatinine indices in patients under 60 years old were 74.9 ± 17.7 and in 60 years old and older - 98 ± 21.9 $\mu\text{mol} / \text{l}$ ($p < 0.05$).

A comparative analysis of this biochemical indicator, depending on the presence of anemia, revealed the following: with hemoglobin 112.43 ± 12.0 g / l, creatinine was 119.64 ± 13.7 μmol / l and with hemoglobin 134 ± 9 g / l, this indicator was 89.6 ± 8.5 μmol / l ($p < 0.01$).

Based on the FC, when comparing the creatinine indices, it was in patients with FC I- 83.2 ± 2.8 , FC II- 101 ± 3.8 , FC III- 128 ± 5.4 , FC-IV 138.9 ± 9 , 1 μmol / L.

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

CONCLUSION

CHF often occurs with comorbid conditions, among which anemia, 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 blood creatinine levels.

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

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