EPIDEMIOLOGY AND ETIOPATHOGENESIS OF CHF

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Abstract CHF is a dangerous symptom that is gaining momentum in terms of the number of hospitalized patients in extremely serious condition and the mortality rate. At the time of the latest CVD studies in Uzbekistan, CHF occupied a leading position in the structure of morbidity and mortality, accounting for 59.3% of the total mortality of the population. It is already expected that in the next 20 years, the prevalence of CHF will increase by 25%.

Aim: The purpose of this article is to identify the cause of CHF, its course, and the main complications that CHF can lead to. By analyzing these data, it is planned to identify the risk group and the points to which the clinician should pay special attention.

Materials and methods: The anamnesis of 136 patients with CHF of various stages who were treated at the 1st clinic of SamSMU in the Department of Cardiology in the period from June to August 2022 was analyzed.

Results and discussions: Chronic heart failure (CHF) is a disease in which the heart is unable to pump enough blood to ensure that the body is provided with oxygen. Simply it`s an impairment between heart pumping ability and body's need of oxygen. CHF is not an independent disease, but a complication (or symptom) of the underlying disease, which can be arterial hypertension, coronary heart disease, congenital malformations, etc.

Table 1. Symptoms of CHF

Shortness of breath	After physical activity
	When moving to a horizontal position
	At the rest
	Waking up short of breath at night
Cough	After physical activity
	Dry
	Hacking
	Sometimes with pinkish sputum
Swelling	In feet
	In ankles
	In shins
Rapid or irregular heartbeat	
Reduced ability to exercise	
Fatigue and weakness	
Dizziness	
Lack of appetite and nausea;	
Decreased attention and intelligence	
Ascites or/and hydrothorax	
Discomfort in the right hypochondria due to liver enlargement	
Frequent urination at night (nicturia)	
Exhaustion in the later stages of the disease	

The symptoms that occur in heart failure are common, but their combination is very informative in diagnosis. The symptoms are described in table 1.

The first indicator considered in our study was the prevalence of CHF depending on gender. It is believed that men are more susceptible to cardiovascular diseases, however, as our data shows that their numerical superiority is insignificant. So, for men, the total number of patients was 72 (53%), and for women 64 (47%).

Also, to determine the risk groups and prevalence of CHF in a limited age group, patients were divided according to their age. The analysis data is presented in Table 2.

Table 2. Division of patients according to their age

Group	Age	Number of pat.	Percent (%)
1	Under 40	14	10%
2	40-55	27	20%
3	56-70	75	55%
4	Over 70	20	15%

As shown in the table, CHF is really more common in a certain age group of the population. Thus, the leading group was patients aged 56-70 years with 75 affected, which in turn accounted for 55% of the total number of analyzed cases. The least number were patients under 40 years of age, only 14 patients in this group had CHF (10% of the total).

As mentioned above, CHF is not an independent disease, but only a complication of the primary disease. For example, the main causes of CHF in the Russian Federation include: arterial hypertension (95.5%), coronary heart disease (69.7%), myocardial infarction (15.3%), diabetes mellitus (15.9%). A combination of coronary heart disease and arterial hypertension occurs in most patients with CHF. COPD (chronic obstructive pulmonary disease) accounts for 13% of all causes of CHF, chronic and paroxysmal atrial fibrillation — 12.8%, acute cerebrovascular accident — 10.3%. When examining our patients, a similar trend was revealed. Thus, out of 136 patients, 72% (98 patients) had angina pectoris as the main disease, 32 patients (23.5%) had hypertension etc. The reasons for the development of CHF will be given in Table 3.

Table 3. Etiology of CHF

Underlying disease		Number of pat.	Percent (%)
Angina pectoris	FS II	28	20,5 %
	FS III	49	36 %
	FS II-III	16	11,8 %
	FS III-IV	5	4 %
Atherosclerotic cardiosclerosis		4	3 %
Postinfarction cardiosclerosis		26	19 %
Hypertension	II	22	16 %
	III	10	7 %
Chronic rheumatic heart disease		15	11 %
Congenital malformations		26	19 %
Diabetes mellitus		4	3 %
Cardiomyopathy	dilated	7	5 %
	ischemic	1	0,7 %

Myocarditis	postcovid	1	0,7 %
	infectious	1	0,7 %
Idiopathic primary pulmonary hypertension		1	0,7 %
Myocardiodystrophy		2	1,5 %
Community–acquired pneumonia		2	1,5 %
Constrictive pericarditis		1	0,7 %

CHF is characterized by high comorbidity, this phenomenon significantly worsens the patient's condition, increases the risk of death. Thus, according to some data, 60% of all cases of CHF are accompanied by other diseases, of which the most common are CVD. However, diseases of other systems and organs are not uncommon, such as the excretory system (pyelonephritis), the digestive system (cholecystitis), the musculoskeletal system (osteoarthritis), the hematopoietic system (anemia), etc. Type 2 diabetes mellitus is considered one of the most common and dangerous diseases in patients with CHF. Such patients often complain of a deterioration in the quality of life, general condition and lack of signs of reconvolescence in themselves. 22 patients out of all cases considered by us had type 2 diabetes mellitus (16% of the total number). Other diseases are presented in table 4.

Table 4. Comorbidity of CHF

Disease	**Number of pat.**	**Percent (%)**	**Total cases**	**Percent (%)**
Hypertension	59	43 %		
Diabetes mellitus	22	16 %		
Anemia	25	18 %		
Chronic pyelonephritis	15	11 %		
Chronic calculous cholecystitis	12	9 %		
Chronic bronchitis	6	4,5 %	105	77 %
Gallstone disease	6	4,5 %		
Obesity I-III degree	7	5 %		
Hepatitis	7	5 %		
Osteochondrosis -	5	4 %		
Rheumatoid polyarthritis	3	2 %		
Osteoarthritis	4	3 %		
COPD	2	1,5 %		
Cirrhosis	2	1,5 %		
Parkinsonism	1	0,7 %		
Poliomyelitis	1	0,7 %		

An important object of research is determining the functional class and stage of CHF. The classification of CHF FS is proposed by the New York Heart Association (NYHA), it defines FS based on the limitation of physical activity and the patient's condition at rest. According to this classification, there are 4 FS of CHF. So, with FS I, there are no restrictions on physical activity and it does not lead to fatigue, shortness of breath or palpitations, only increased exercise can be accompanied by these symptoms. With FS II, the restriction of physical activity is insignificant, and ordinary physical activity leads to fatigue, shortness of breath, palpitations. The next FS III has a moderate degree of restriction of physical activity and even a small load leads to fatigue, shortness of breath, palpitations. FS IV is characterized by symptoms at rest, which increase with any physical exertion.

The stages of CHF were studied by Strazhesko-Vasilenko (1935). According to their classification, 3 stages are determined; the second is divided into two groups: A and B. This classification is based on a violation of hemodynamics and clinical manifestations. So, CHF I (the initial stage of the disease): hemodynamics is not disturbed. The insufficiency is asymptomatic. CHF IIA is characterized by moderately pronounced clinical signs, a violation of hemodynamics in one of the circulatory circles. CHF IIB is a severe stage of the course of the disease, in which hemodynamics is disrupted in both circles of blood circulation. CHF III is the final stage of the disease, in which severe hemodynamic disorders lead to irreversible disorders in target organs (heart, brain, kidneys).

Table 5(A).Division by CHF FS classification by NYHA

FS	Number of Pat.	Percent (%)
II	39	29%
III	57	42%
III – IV	7	5%
IV	2	1 %
Indeterminate	31	23%

Table 5(B). Division by CHF stage according to Strazhesko-Vasilenko classification (1935)

Stage	Number of Pat.	Percent (%)
II-A	115	84%
II-B	17	13%
Indeterminate	4	3%

CHF with a long course always leads to severe complications from various organ systems. Also, if there is another underlying disease, CHF exacerbates its course, which also leads to many complications. Diseases that were complications of/except CHF were also found in our data. Of these, 21 patients with atrial fibrillation, 7 patients with diabetic sensory polyneuropathy, 5 with diabetic angiopathy, 7 with ventricular extrasystole, 4 with CRF, 6 with dyscirculatory encephalopathy, 3 with AV block, 1 with chronic anemia, 2 with nephropathy, 3 with retinopathy, 1 with periodontal disease, 1 with diabetic enteropathy, 2 with acute cerebrovascular accident, 2 right-sided hydrothorax, 1 ascites and anasarca, hydropericardium- 1, paresis -2.

Conclusions:

Analysis of the prevalence of CHF among various population groups led us to the conclusion that heart failure is slightly more common in men; it is also predominantly common among people over 50 years of age. The dominant age group is 56-70 years old with 75 patients (55%). In more than 80% of cases, myocardial damage prevails in the etiology of chronic heart failure.

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