Patients with a Combination of Atrial Fibrillation and Chronic Heart Failure in Clinical Practice: Comorbidities, Drug Treatment and Outcomes

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Aim. To assess in clinical practice the structure of multimorbidity, cardiovascular pharmacotherapy and outcomes in patients with a combination of atrial fibrillation (AF) and chronic heart failure (CHF) based on prospective registries of patients with cardiovascular diseases (CVD).

Materials and Methods. The data of 3795 patients with atrial fibrillation (AF) were analyzed within the registries RECVASA (Ryazan), RECVASA FP (Moscow, Kursk, Tula, Yaroslavl), REGION-PO and REGION-LD (Ryazan), REGION-Moscow, REGATA (Ryazan). The comparison groups consisted of 3016 (79.5%) patients with AF in combination with CHF and 779 (29.5%) patients with AF without CHF. The duration of prospective observation is from 2 to 6 years.

Results. Patients with a combination of AF and CHF (n=3016, age was 72.0±10.3 years; 41.8% of men) compared with patients with AF without CHF (n=779, age was 70.3±12.0 years; 43.5% of men) had a higher risk of thromboembolic complications (CHA_2DS_2-VASc – 4.68±1.59 and 3.10±1.50; p<0.001) and hemorrhagic complications (HAS-BLED – 1.59±0.77 and 1.33±0.76; p<0.05). Patients with a combination of AF and CHF significantly more often (p<0.001) than in the absence of CHF were diagnosed with arterial hypertension (93.9% and 83.8%), coronary heart disease (87.9% and 53,5%), myocardial infarction (28.4% and 14.0%), diabetes mellitus (22.4% and 7.7%), chronic kidney disease (24.8% and 16.2%), as well as respiratory diseases (20.1% and 15.3%; p=0.002). Patients with AF in the presence of CHF, compared with patients without CHF, were more often diagnosed with a permanent form of arrhythmia (49.3% and 32.9%; p<0.001) and less often paroxysmal (22.5% and 46.2%; p<0.001) form of arrhythmia. Ejection fraction ⩽40% (9.3% and 1.2%; p<0.001), heart rate ⩾90/min (23.7% and 19.3%; p=0.008) and blood pressure ⩾140/90 mm Hg (59.9% and 52.2%; p<0.001) were recorded with AF in the presence of CHF more often than in the absence of CHF. The frequency of proper cardiovascular pharmacotherapy was higher, albeit insufficient, in the presence of CHF (64.9%) than in the absence of it (56.1%), but anticoagulants were prescribed less frequently when AF and CHF were combined (38.8% and 49, 0%; p<0.001). The frequency of unreasonable prescription of antiplatelet agents instead of anticoagulants was 52.5% and 33.3% (p<0.001) in the combination of AF, CHF and coronary heart disease, as well as in the combination of AF with coronary heart disease but without CHF. Patients with AF and CHF during the observation period compared with those without CHF had higher mortality from all causes (37.6% and 30.3%; p=0.001), the frequency of non-fatal cerebral stroke (8.2% and 5.4%; p=0.032) and myocardial infarction (4.7% and 2.5%; p=0.036), hospitalizations for CVD (22.8% and 15.5%; p<0.001).

Conclusion. Patients with a combination of AF and CHF, compared with the group of patients with AF without CHF, were older, had a higher risk of thromboembolic and hemorrhagic complications, they were more often diagnosed with other concomitant cardiovascular and chronic noncardiac diseases, decreased left ventricular ejection fraction, tachysystole, failure to achieve the target blood pressure level in the presence of arterial hypertension. The frequency

of prescribing proper cardiovascular pharmacotherapy was higher, albeit insufficient, in the presence of CHF, while the frequency of prescribing anticoagulants was less. The incidence of mortality from all causes, the development of non-fatal myocardial infarction and cerebral stroke, as well as the incidence of hospitalizations for CVDs were higher in AF associated with CHF.

Key words: atrial fibrillation, chronic heart failure, outpatient and hospital registries, concomitant diseases, multimorbidity, pharmacotherapy, outcomes, mortality.

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Introduction

Atrial fibrillation (AF) is the most common heart rhythm disorder and is associated with an increased risk of stroke, death from stroke, and hospitalization [1]. According to epidemiological studies, about 2% of the population have this disease [2]. At the same time, the AF prevalence increases with age [3, 4] and with the appearance of cardiovascular diseases (CVD) in patients [5]. It's very important to study the combination of AF with chronic heart failure (CHF) both in connection with the frequent combination of these conditions (10% of patients with moderate CHF and up to 50% with severe CHF have such a combination), and with the peculiarities of drug treatment when these two pathologies are combined [6, 7].

According to the EPOCHA epidemiological study (data for 2017), AF was also diagnosed in 12.3% of patients with CHF [8], and according to the results of the study by E.V. Oshchepkova et al. [9] AF was detected in 5% of patients with CHF at the outpatient stage and in 17% at the hospital stage (and not only in cases of CHF decompensation). Also, according to the EPOCHA-decompensation study, AF was diagnosed in 46.3% of those hospitalized with CHF decompensation [10].

Also, a significant proportion of patients with AF are diagnosed with CHF. In the PROFILE registry, which included outpatients from a specialized cardiology unit, 49.3% of patients with AF had CHF [11], and in the European EORP-AF registry, which included both outpatients and inpatients who consulted cardiologists, 39.5% patients with AF had CHF [12].

It's fundamentally important for the planning and improvement of treatment and prevention care for patients with CVDs is the creation of medical registries in order to assess the compliance of treatment in clinical practice with current recommendations, to determine the frequency of AF and CHF combination with other cardiovascular and chronic noncardiac diseases, as well as to analyze the outcomes with these conditions [13, 15].

The study aim to assess in clinical practice the structure of multimorbidity, cardiovascular pharmacotherapy and outcomes in patients with a combination of AF and CHF based on prospective registries of patients with CVD.

Material and methods

Data from 9 registries were analyzed, which included a total of 8696 people with CVD, including 3795 patients with AF in the following five regions

of the Russian Federation: Moscow, Ryazan, Kursk, Tula, Yaroslavl. Five of these studies are outpatient prospective studies (observation was carried out for 2-6 years), and 4 are hospital studies, of which prospective observation was carried out in three registries for 2-4 years.

Algorithm for the inclusion of patients with AF in the CVD registers

1) The RECVASA registry (Ryazan) included 530 patients with AF out of 3690 people with CVD permanently residing in Ryazan or the Ryazan region, who applied to 3 polyclinics in Ryazan or Ryazan region for the period March-May 2012, September-October 2012 and January-February 2013, in which the outpatient card indicates the presence of a diagnosis of arterial hypertension (AH), coronary heart disease (CHD), CHF, AF or their combinations.
2) The RECVASA FP-Kursk registry included 502 patients with AF living in the city of Kursk, hospitalized in the Kursk City Clinical Emergency Hospital for the period June 2013-May 2014.
3) The RECVASA FP-Moscow registry included 508 patients with AF living in Moscow, hospitalized at the Federal State Budgetary Institution of National Medical Research Center of Therapy and Preventive Medicine in April 2013-March 2014.
4) The RECVASA FP-Tula registry included 1225 patients with AF living in the city of Tula or in the Tula region, hospitalized in the Tula regional clinical hospital in January-December 2013.
5) The RECVASA FP-Yaroslavl registry included 404 patients with AF living in Yaroslavl, who applied to 2 polyclinics in Yaroslavl for the period January-December 2013.
6) The REGION-PO registry included 141 patients with AF out of 475 people living in the city of Ryazan or the Ryazan region, who for the first time after suffering an acute cerebrovascular accident (ACVA) applied to 3 polyclinics in Ryazan or Ryazan region for the period 2014-2015.
7) The REGION-LD registry included 107 patients with AF out of 511 people living in Ryazan or the Ryazan region who underwent ACVA, who applied to 3 polyclinics in Ryazan or Ryazan region for the period 2012-2013.
8) The REGION-Moscow registry included 268 patients with AF out of 900 people permanently residing in Moscow, hospitalized in one of the vascular centers on the basis of a clinical hospital in Moscow for the period 2012-2017, with an indication of ACVA in the clinical diagnosis of medical history.
9) The REGATA registry included 112 patients with AF out of 481 people living in Ryazan or the Ryazan region who had myocardial infarction (MI), who applied to 3 polyclinics in Ryazan or Ryazan region for the period 2012-2013.

A more detailed description of the design, structure of multimorbidity, cardiovascular pharmacotherapy and outcomes in patients from the above registries was published by us earlier [16, 23]. This publication contains information on secondary data.

Criteria for inclusion in the study: indication of the AF diagnosis in the outpatient card or in the clinical diagnosis of medical history; going to a polyclinic or hospitalization in a hospital during the above periods of inclusion in the registries The duration of prospective observation of patients was in registries: RECVASA (Ryazan) – 5.8 [3.5; 6.5] years, RECVASA FP-Kursk – 2.2 [1.7; 2.7] years, RECVASA FP-Moscow – 2.0 [1.8; 2.2] years, RECVASA FP-Yaroslavl – 2.0 [1.8; 2.7] years, REGION-PO (Ryazan) – 2.0 [1.6; 2.8] years, REGION-LD (Ryazan) – 4.3 [3.2; 5.1] years, REGION-Moscow – 2.0 [1.3; 3.2] years, REGATA (Ryazan) – 6.1 [4.0; 6.6] years. Information about the occurrence of events (death, myocardial infarction, cerebral stroke, hospitalization for CVD) and about the drug therapy carried out at the stage of long-term observation was obtained by telephone contact with the patient or during his visit to the doctor, from medical records and electronic databases. The assessment of the frequency of diagnosing combined CVD and chronic noncardial pathology, the appointment of cardiovascular pharmacotherapy, as well as the outcomes of observation was carried out in patients with AF.

The comparison groups were patients with AF combined with CHF and with AF without CHF according to medical records. Comparison of the multimorbidity structure, forms of AF, cardiovascular pharmacotherapy at the stage of inclusion in the registries was carried out within all 9 of the above registries (in 3016 patients with a combination of AF and CHF in 779 patients with AF without CHF).

Comparative assessment of long-term outcomes was carried out within 8 registries (excluding the RECVASA FP-Tula registry) in 2019 patients with a combination of AF and CHF and in 551 patients without CHF. This exception was due to the fact that there was no prospective observation of patients after discharge from the hospital in the RECVASA FP-Tula registry.

Descriptive statistics methods were used for statistical processing of the data. Numerical data are presented as M±SD or Me [25%; 75%]. The statistical significance of differences in numerical data was assessed using the Student's test. The statistical significance of categorical data was assessed using the chi-square test. Differences were considered statistically significant at $p<0.05$. The data were statistically processed using the Statistica 7.0 and Stata 15.0 software.

Results

The 3795 patients with AF included in the study had an average age of 71.7±10.7 years, among them there were 1601 men (42.2%), and 2194 women (57.8%). The combination of AF and CHF was diagnosed in 3016 (79.5%) patients (average age was 72.0±10.3 years, 41.8% of men). The group of patients with AF without CHF consisted of 779 people (average age was 70.3±12.0 years, 43.5% of men). Patients with a combination of AF and CHF patients, compared with patients with AF without CHF, had a higher risk of thromboembolic complications (CHA_2DS_2-VASc 4.68±1.59 versus 3.10±1.50; $p<0.001$) and the risk of hemorrhagic complications (HAS-BLED 1.59±0.77 versus 1.33±0.76; $p<0.05$).

Patients with AF with CHF, compared with patients with AF without CHF, were significantly more likely to be diagnosed with AH, CHD, previous MI, diabetes mellitus, respiratory diseases, chronic kidney disease (CKD) and obesity (Table 1). We note that 87.9% of patients in the group with AF and CHF also had a combination of AH and CHD. The proportions of people with coronary heart disease (by 1.6 times), MI (by 2.0 times), with a combination of hypertension and coronary heart disease (by 1.7 times) differed to the greatest extent between the comparison groups.

Persistent forms of arrhythmia were recorded more often among patients with AF in the presence of CHF than in the absence of CHF, and the paroxysmal form was recorded less frequently, while the frequency of indication of newly diagnosed AF in the comparison groups didn't differ significantly (Table 2).

Table 1. The proportion of people with concomitant CVDs and chronic noncardiac diseases among patients with AF and with/without CHF (data from the RECVASA, REGION, REGATA registries)*

Diagnosis	Patients with AF and CHF (n=3016)	Patients with AF without CHF (n=779)	p
Arterial hypertension, n (%)	2831 (93.9)	653 (83.8)	<0.001
Coronary heart disease, n (%)	2652 (87.9)	417 (53.5)	<0.001
Arterial hypertension + Coronary heart disease, n (%)	2530 (83.9)	376 (48.3)	<0.001
Myocardial infarction, n (%)	858 (28.4)	109 (14.0)	<0.001
Cerebral stroke, n (%)	922 (30.6)	323 (41.5)	0.290
Diabetes mellitus, n (%)	676 (22.4)	60 (7.7)	<0.001
Respiratory diseases, n (%)	605 (20.1)	119 (15.3)	0.002
COPD, n (%)	272 (9.0)	61 (7.8)	0.290
Bronchial asthma, n (%)	103 (3.4)	17 (2.2)	0.070
Chronic kidney disease, n (%)	748 (24.8)	126 (16.2)	<0.001
Anemia, n (%)	206 (6.8)	41 (5.3)	0.110
Digestive system diseases, n (%)	1228 (40.7)	320 (41.1)	0.840
Obesity (diagnosed), n (%)	517 (17.1)	107 (13.7)	0.020

* RECVASA, RECVASA-FP (Kursk, Moscow, Tula, Yaroslavl), REGION (Ryazan, Moscow), REGATA

CHF – chronic heart failure, COPD – chronic obstructive pulmonary disease, AF – atrial fibrillation

Determination of the left ventricular ejection fraction in patients with AF was carried out insufficiently often (in 57.2% of cases), while it was significantly more often carried out in AF associated with CHF (in 59.3% of cases) than in AF without CHF (51.0%, $p<0.001$; Table 3). The proportion of patients with reduced and intermediate ejection fraction (⩽40% and 41-49%, respectively) was significantly higher among patients with CHF, which should correspond to the presence of this pathology. But we note that decreased (1.2%) or intermediate (2.8%) values of the left ventricular ejection fraction were detected in a small part of patients with AF despite the absence of a CHF diagnosis. We also point out that tachysystole and the lack of reaching the target blood pressure level in the presence of hyper-

Table 2. Forms of atrial fibrillation in patients with / without CHF (data from the RECVASA, REGION, REGATA registries)*

Form of atrial fibrillation	Patients with AF in combination with CHF (n=3016)	Patients with AF without a combination of CHF (n=779)	p
Paroxysmal, n (%)	680 (22.5)	360 (46.2)	<0.001
Persistent, n (%)	716 (23.8)	86 (11.0)	<0.001
Permanent, n (%)	1486 (49.3)	256 (32.9)	<0.001
First-time detected, n (%)	49 (1.6)	13 (1.7)	0.930
Not specified, n (%)	85 (2.8)	64 (8.2)	<0.001

* RECVASA, RECVASA-FP (Kursk, Moscow, Yaroslavl), REGION (Ryazan, Moscow), REGATA

Table 3. Evaluation of left ventricular ejection fraction, frequency of detection of tachysystole and high blood pressure in patients with AF with or without CHF

Indicator	Patients with AF in combination with CHF (n=3016)	Patients with AF without a combination of CHF (n=779)	p
EF assessment, n (%)	1787 (59.3)	397 (51.0)	>0.001
EF⩾50%	77.9% (1392 out of 1787)	92.9% (369 out of 397)	>0.001
EF is 41-49%	14.3% (255 out of 1787)	2.8% (22 out of 397)	>0.001
EF⩽40%	9.3% (166 out of 1787)	1.2% (9 out of 397)	>0.001
Heart rate ⩾90/min	23.7% (716 out of 3016)	19.3% (150 out of 779)	0.008
BP ⩾140/90 mm Hg	59.9% (1807 out of 3016)	52.2% (407 out of 779)	0.001

EF – ejection fraction, BP – blood pressure. Tachysystole – heart rate ⩾90/min, high blood pressure – ⩾140/90 mm Hg.

tension, which are risk factors for cardiovascular complications, were recorded in patients with a combination of AF and CHF more often than in the absence of CHF. In addition, almost every fifth patient in both comparison groups also had a prognostically unfavorable decrease in hemoglobin level (in men <130 g/l and in women <120 g/l), in the absence of significant differences between the groups (18.7% and 20.2%; p=0.50).

Prescribed cardiovascular pharmacotherapy was more consistent with clinical guidelines in patients with a combination of AF and CHF compared with the group of patients with AF without CHF (Table 4). In particular, antihypertensive therapy for hypertension, angiotensin-converting enzyme inhibitors (ACEi)/antiotensin receptor blockers (ARBs) and

Table 4. The frequency of prescribing prognostically significant pharmacotherapy for CVD in patients with AF with / without CHF (data from the RECVASA, REGION, REGATA registries)

Drug therapy and indication	Patients with AF and CHF (n=3016)	Patients with AF without CHF (n=779)	p
Anticoagulants	38.8% (1170 out of 3016)	49.0% 382 out of 779	<0.001
Antihypertensive therapy for hypertension	92.1% (2606 out of 2831)	77.3% (505 out of 653)	<0.001
ACEi/ARBs for previous myocardial infarction	88.9% (763 out of 858)	65.1% (71 out of 109)	<0.001
ACEi/ARBs for CHF	80.8% (2436 out of 3016)	–	–
β-blockers for previous myocardial infarction	67.1% (576 out of 858)	54.1% (59 out of 109)	<0.001
β-blockers for CHF	60.8% (1834 out of 3016)	–	–
Statins for coronary heart disease	52.5% (1392 out of 2652)	46.0% (192 out of 417)	0.01
Statins for previous cerebral stroke	46.1% (425 out of 922)	43.9% 98 out of 223	0.560
ACEi for previous cerebral stroke	58.2% (537 out of 922)	46.6% 104 out of 223	0.002
Average frequency of compliance with mandatory indications	64.9%* (11739 out of 18091)	56.1%* (1411 out of 2513)	–

* proportion (%) of the total number of drug prescriptions from the total number of indications for their implementation

CHF – chronic heart failure, ACEi – angiotensin-converting enzyme inhibitors, ARBs – angiotensin receptor blockers

beta-blockers for previous MI, statins for coronary heart disease, and ACEi for a history of cerebral stroke were more often prescribed. Nevertheless, anticoagulant therapy was less frequently prescribed in the group of patients with a combination of AF and CHF than in AF without CHF (38.8% versus 49.0%; p <0.001), despite the higher risk of thromboembolic complications.

It's necessary to pay attention to the fact that anticoagulants were prescribed in patients with a combination of AF, CHF and CHD only in 35.2% (933 of 2652) cases, and in patients with AF without CHF, but with CHD – in 36.2% (151 out of 417). It's fundamentally important to note that the frequency of unreasonable prescription of antiplatelet agents was 81.0% (1392 out of 1719) among patients with AF in combination with CHF and CHD who didn't receive anticoagulants. The frequency of prescribing antiplatelet agents instead of anticoagulants

Table 5. The frequency of prescribing anticoagulants to patients with AF in the presence / absence of a combination with CHF (data from the RECVASA, REGION, REGATA registries)

Anticoagulants	Patients with AF and CHF (n=3016)	Patients with AF without CHF (n=779)	p
Direct oral anticoagulants	11.9% (360 out of 3016)	28.6% (223 out of 779)	<0.001
Warfarin	24.0% (723 out of 3016)	17.7% (138 out of 779)	<0.001
Other anticoagulants	2.9% (87 out of 3016)	2.7% (21 out of 779)	0.780

Table 6. Frequency of fatal and non-fatal events according to the data of prospective observation of patients with AF in the presence / absence of a combination with CHF

Events	Patients with AF with CHF (n=2019)	Patients with AF without CHF (n=551)	p
Death from all causes, n (%)	760 (37.6)	167 (30.3)	0.001
Non-fatal myocardial infarction, n (%)	95 (4.7)	14 (2.5)	0.036
Non-fatal cerebral stroke, n (%)	165 (8.2)	30 (5.4)	0.032
Hospitalization for CVD, n (%)	688 (22.8)	121 (15.5)	<0.001

AF – atrial fibrillation, CHD – coronary heart disease, CVD – cardiovascular disease

in patients with AF without CHF but with CHD was 52.3% (139 of 266). In general, the frequency of unreasonable prescription of antiplatelet agents instead of anticoagulants was significantly higher in the group of patients with AF, CHF and CHD – 52.5% (1392 of 2652) than in the group of patients with AF and CHD without CHF – 33.3% (139 of 417; p<0.001).

Table 5 shows data that the following differences in the frequency of prescribing different options for anticoagulant therapy were in patients with AF in combination with CHF, in contrast to patients with AF without CHF: direct oral anticoagulants (DOAC) were prescribed 1.9 times less frequently (30.8% and 58.4% of all cases of prescribing anticoagulants in these groups), warfarin was prescribed 1.7 times more often (61.7% and 36.1%, respectively), other anticoagulants were prescribed 1.1 times more often (7.4%, compared to 5.5%).

According to prospective observation, the proportion of deaths from all causes, the incidence of non-fatal myocardial infarction, as well as hospitalizations for CVD were significantly higher in patients with AF combined with CHF, compared with patients with AF without CHF (Table 6).

Discussion

According to the results of this study, most patients (79.5%) with AF had CHF, which is significantly more than according to several foreign studies (for example, 39.5% and 47.5% of patients with AF had CHF according to the results of the studies EORP-AF [12] and EORP-AF pilot [24], and according to the Framingham study, CHF developed in one third of patients with AF [25]). The higher percentage of patients with CHF among patients with AF in our work may be due to the fact that the number of patients with preserved left ventricular ejection fraction depends on the diagnostic criteria used, while the proportion of patients with a diagnosis of CHF is greater in clinical diagnosis without using additional echocardiographic parameters and determining the natriuretic peptide level (NTproBNP) [26]. This is also due to the fact that patients with cerebral stroke were included in some of the registries we analyzed, and the presence of CHF is one of the risk factors for stroke in patients with AF [1].

The work shows that patients with AF in combination with CHF were characterized by a large number of concomitant cardiovascular and chronic noncardiac diseases, in particular, hypertension, coronary heart disease, previous myocardial infarction, diabetes mellitus, respiratory diseases, chronic kidney disease and obesity compared with patients with CHF without AF. The EORP-AF pilot registry also showed that the proportion of cases of coronary heart disease, heart defects, COPD, diabetes mellitus, previous strokes, chronic kidney disease is higher among patients with CHF and AF compared to patients with AF without CHF [24].

More pronounced multimorbidity in patients with AF in combination with CHF is due to the fact that CHF can be caused by a number of other reasons besides AF, in particular hypertension, coronary heart disease, diabetes mellitus and other reasons [27]. Also, patients with a combination of CHF and AF were older (on average by 1.7 years), and the likeli-

hood of CHF, AF, and other diseases increases with age [3].

According to this study, the persistent form of this arrhythmia, corresponding to the later stages of its continuum, was recorded in patients with AF and CHF more often than in the absence of CHF. This result is also consistent with the EORP-AF pilot data [24]. Perhaps this is due to the longer existence of AF and a more pronounced change in the morpho-functional parameters of the atria. The clinical features of patients with paroxysmal and permanent AF differ significantly, which may affect treatment and prognosis. The Realise AF registry showed that the incidence of cardiovascular and noncardiac diseases (CHF, CHD, chronic obstructive pulmonary disease, cerebrovascular diseases and thromboembolic complications) increased as AF progressed from paroxysmal to permanent form [28]. This question will be the subject of our further studies and subsequent publications.

An important result we obtained is the fact that the prescribed cardiovascular pharmacotherapy was more consistent with clinical guidelines in patients with a combination of AF and CHF, compared with the group of patients with AF without CHF. In particular, antihypertensive therapy for hypertension, ACEi/ARBs and beta-blockers for previous myocardial infarction, statins for coronary heart disease, and ACEi with a history of cerebral stroke were more often prescribed. The frequency of prescribing beta-blockers to patients with AF and CHF was 60.8%, which is lower than in patients with AF and CHF in the European EORP-AF pilot registry (76.4%) [24]. In general, according to the EORP-AF pilot registry, patients with a combination of CHF and AF were also more often prescribed basic drugs for the treatment of cardiovascular diseases [24] than patients with AF without CHF.

However, we note that anticoagulant therapy was prescribed in the group of patients with a combination of AF and CHF less often than in the group of patients with AF without CHF, despite the higher risk of thromboembolic complications. This was partly due to the fact that in some cases the attending physicians unreasonably gave preference to antiplatelet agents in the presence of coronary heart disease, and anticoagulants were not prescribed. An interesting finding of the work is the fact that patients with CHF were prescribed direct oral anticoagulants 1.9 times less often and warfarin was prescribed 1.4 times more often than in the absence of CHF. This is difficult to explain, since direct oral anticoagulants are the preferred drugs in patients with a combination of AF and CHF, with the exception of patients with moderate to severe mitral stenosis, mechanical valves, and a number of rare causes of CHF (eg, noncompact cardiomyopathy) [29, 30].

A low percentage of prescribing anticoagulants in patients with AF (both with CHF and without CHF) has also been shown in several Russian and foreign studies [31, 32]. Active work with doctors is required to address this issue to reduce the incidence of strokes in patients with AF.

Analysis of long-term outcomes revealed that patients with a combination of AF and CHF, compared with patients with AF without CHF, had higher mortality from all causes, the incidence of non-fatal myocardial infarction and cerebral stroke, and the proportion of hospitalizations for CVD was higher. A number of other studies have also shown that the presence of CHF worsens the prognosis of patients with AF [25, 32], and the frequency of hospitalizations is most likely associated with more frequent decompensations of CHF and AF and the need for inpatient treatment in patients with comorbid diseases.

Conclusion

Patients with a combination of AF and CHF, compared with the group of patients with AF without CHF, were older, had a higher risk of thromboembolic and hemorrhagic complications, they were more often diagnosed with other concomitant cardiovascular and chronic noncardiac diseases, as well as decreased left ventricular ejection fraction, tachysystole and the lack of reaching the target level of blood pressure in the presence of arterial hypertension was more often detected. The frequency of prescribing proper cardiovascular pharmacotherapy was higher, albeit insufficient, in the presence of CHF, while the frequency of prescribing anticoagulants was less. The incidence of death from all causes and the development of non-fatal myocardial infarction and cerebral stroke, as well as the incidence of hospitalizations for cardiovascular pathology, were higher in AF associated with CHF.

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