https://doi.org/10.35336/VA-2023-1-01

ATRIAL FIBRILLATION IN REAL CLINICAL PRACTICE AT THE OUTPATIENT STAGE E.V.Gorbunova, S.P. Duvanova, S.E.Mamchur Federal State Budgetary Scientific Institution 'Research Institute for Complex Issues of Cardiovascular Diseases', Russia, Kemerovo, 6 Sosnoviy ave.

The aim of the study was to analyze clinical and anamnestic data, the nature of anticoagulant therapy and the incidence of adverse events based on the data of the registry of atrial fibrillation (AF) patients at the outpatient stage (2019-2020).

Methods. The study involved 638 people (56.7% of them women) included in the registry of patients with AF, 68.2±4.5 of age. Inclusion criteria: patients over the age of 18 who applied for a consultation with a cardiologist at a cardiodispensary polyclinic and signed an informed consent.

Results. The analysis of clinical and anamnestic data of patients with tachyarrhythmia was carried out. Paroxysmal AF was registered in 311 (48.8%) patients, persistent - in 138 (21.6%), long-term persistent - in 44 (6.9%) and permanent - in 142 (22.7%) patients. The average score on the CHA_2DS_2 -VASc was 4.8 ± 1.8 points, on the HAS-BLED score - 2.8 ± 1.6 points, on the 2MACE score - 1.3 ± 0.8 points. Compliance to treatment corresponded to 2.5 ± 1.5 points. When analyzing the registry of AF patients, the characteristics of anticoagulant therapy are presented. In fact, 172 (27%) patients took rivaroxaban, 166 (25%) apixaban, 84 (13%) dabigatran and 210 (33%) patients took warfarin. Among those examined, the main cause of death in 30 (4.7%) patients was coronary artery disease, of which two had myocardial infarction.

Conclusion. Based on clinical and anamnestic data, a 'portrait' of a patient with AF at the outpatient stage is presented, which is characterized by a predominance of the risk of thrombotic complications over the risk of hemorrhagic and coronary events, with low adherence to treatment and implementation of doctor's recommendations. When analyzing the register of patients with AF, the characteristics of anticoagulant therapy and the causes of adverse outcomes are presented.

Key words: registry; atrial fibrillation; outpatient stage; clinical and anamnestic characteristics; poor outcome

Conflict of Interests: nothing to declare.

Funding: none.

Received: 23.05.2022 Revision received: 11.07.2022 Accepted: 20.07.2022

Corresponding author: Gorbunova Elena, E-mail: e.v.gorbunova@yandex.ru

E.V.Gorbunova - ORCID ID 0000-0002-2327-2637, S.P.Duvanova - ORCID ID 0000-0002-4348-3423, S.E.Mamchur - ORCID ID 0000-0002-8277-5584

For citation: Gorbunova EV, Duvanova SP, Mamchur SE. Atrial fibrillation in real clinical practice at the outpatient stage. *Journal of Arrhythmology*. 2023;30(1): 5-10. https://doi.org/10.35336/VA-2023-1-01.

Atrial fibrillation (AF) is one of the most common arrhythmias; an almost twofold increase in the number of patients with the pathology is expected over the next 50 years [1-3]. It is known that AF itself is not a life-threatening arrhythmia, but it is often associated with fatal cardiovascular events such as stroke and heart attack. It should be noted that the percentage of occurrence of AF in the population increases with age; every fourth patient older than 80 years may have a stroke if anticoagulant therapy is not administered [4, 5]. To assess arrhythmia and determine anticoagulant therapy in accordance with the recommendations for the provision of medical care in clinical practice, pharmacotherapy problems are identified and new approaches to the consideration of this category of patients are practiced [6-8].

All registries with AF can be conditionally divided into those conducted before and after administration of indirect oral anticoagulants (OACs) [9]. Well-known domestic registries are REKVAZA, REKVAZA-CLINIC, Profile [10-12]. Data appeared in the presentation, indicate inconsistence between the initiation of anticoagulant therapy in real clinical practice and the postulates of a closer review [13].

The aim of the study was to analyze the clinical and anamnestic data, the nature of anticoagulant therapy and the incidence of adverse events (hospitalization, death) based on the data of the registry of patients with AF at the outpatient.

METHODS

From July 2019 to March 2020, 638 people (of which 56.7% women) entered in the registry of patients with AF at the age of 68.2 ± 4.5 years (from 33 to 89). Criteria for inclusion in the registry: patients with non-valvular AF over 18 years of age who applied for a consultation with a cardiologist at a cardiological dispensary polyclinic and signed an informed consent.

As part of the implementation of a grant from the Russian Society of Cardiology, a decision-making module 'Personalized choice of anticoagulant in atrial



fibrillation' was developed, which is a program for the implementation of medical decisions based on the algorithm for choosing of anticoagulant therapy in AF with consideration of the use of an anticoagulant (certificate of state registration of the computer program 'Personalized choice of anticoagulant in atrial fibrillation' No. 2019662306 dated 09.20.2019). The information entered in the doctor's electronic outpatient card was taken into account in the disease register of patients with AF (certificate of state registration for the computer 'Electronic register of patients with atrial fibrillation' No. 2019662305 dated 09.20.2019) [14]. Compliance to admission to the PVR was assessed using the Morisky-Green questionnaire, where patients who scored 4 points were considered compliant, and 3 or less points were considered non-compliant.

Statistical analysis. In quantitative analysis, the mean (M) and standard deviation (σ) are calculated. Qualitative parameters are presented by frequencies in percent. Sets of quantitative parameters for two groups, assessed by the Mann-Whitney test. When evaluating the measurement results, comparison tables were built with the subsequent use of Pearson's χ 2. The critical level of the statistical evaluation is 0.05. Statistical processing of the results was carried out using the Statistica software package. v. 8.0 (USA).

RESULTS

Among the examined patients, paroxysmal AF was recorded in 311 (48.8%) patients, persistent - in 138 (21.6%), long-term persistent - in 44 (6.9%) and permanent - in 142 (22.7%) patients. The average score of the CHA₂DS₂-VASc scale was 4.8 ± 1.8 , of the HAS-BLED scale - 2.8 ± 1.6 points, of the 2MACE scale - 1.3 ± 0.8 . Compliance to treatment corresponded to 2.5 ± 1.5 points. Signs of chronic heart failure were recorded according to the NYHA classification: functional class (FC) I - in 56 (8.8%), FC II - in 451 (70.7%), FC III and IV - in 120

(18.8%) and 11 (1.7%) of patients, respectively. Arterial hypertension was observed in 588 (92.2%) patients with AF, of which stage II - in 147 (23.1%) and stage III - in 434 (68.1%) of the subjects.

Coronary artery disease was registered in 306 (48%) patients, of which 70 (23%) had myocardial infarction. Past medical history included coronary bypass grafting in 24 (8%) patients, percutaneous coronary intervention with stenting in 64 (21%) patients, catheter ablation in 58 (9%) patients, to restore sinus rhythm in 28 (4.4 %) cases cardioversion was performed. There was a concomitant pathology: ischemic stroke - in 64 (10%), diabetes mellitus - in 103 (16%), peripheral arterial disease - in 44 (7%) patients with AF.

The study analyzed the degree of compliance with the recommended and actually prescribed anticoagulant therapy using the developed by us PVR 'Personalized choice of anticoagulant in atrial fibrillation'.

In fact, 172 (27%) patients took rivaroxaban, 166 (26%) apixaban, 84 (13%) dabigatran and 210 (33%) patients took warfarin. Six patients, representing 1%, were treated with aspirin. According to the data of the PVR developed by us, anticoagulant therapy should be prescribed: rivaroxaban - 223 (35%), apixaban - 160 (25%), dabigatran - 77 (12%) and warfarin - 178 (28%) patients.

In the AF registry (Kemerovo), 252 (39.5%) patients were hospitalized during one year of follow-up. The first place among the reasons for hospitalizations was paroxysmal AF in 66 (10.3%) patients, the second was unstable coronary artery disease in 42 (6.6%), and the third was Covid-19 in 28 (4.4%) patients. In almost equal proportion, the cause of hospitalization was a stable form of coronary artery disease and stroke, in 23 (3.6%) and 22 (3.4%) patients, respectively. A persistent form of AF was recorded in 16 (2.5%) cases, a permanent form of AF - in 15 (2.4%)



Fig. 1. Causes of hospitalizations in patients with atrial fibrillation (n=252). Note: AH - arterial hypertension, AF atrial fibrillation, CHD - coronary heart disease, AHF acute heart failure, ACA - acute cerebrovascular accident.

Table 1.

Comparison of groups of survived and deceased patients

Index		Comparison groups		
		Survivor (n=568)	Dead (n=70)	P-level
Age, years		65.64 ± 8.68	69.70 ± 7.55	0.0002
Sex	female	302 (53.2%)	38 (54.3%)	0.8597
	male	266 (46.8%)	32 (45.7%)	
Paroxysmal AF		320 (56.3%)	30 (42.8%)	0.0325
Persistent AF		126 (22.2%)	20 (28.6%)	0.2300
Long-term persistent AF		-	8 (11.4%)	-
Permanent AF		122(21.5%)	12 (17.2%)	0.4007
Scale CHA ₂ DS ₂ -VASc		4.62 ± 1.65	5.77 ± 2.08	0.0001
Scale 2MACE		1.43 ± 0.75	1.97 ± 1.33	0.0001
Morisky-Green questionnaire		3.56 ± 0.82	3.51 ± 0.83	0.6309
Therapy	warfarin	130(22.9%)	24 (34.3%)	0.0355
	OAC	436 (76.8%)	46(65.7%)	0.0425
	ASA	2 (0.35%)	-	-

Remark: OAC - direct oral anticoagulants; ASA - acetylsalicylic acid.

cases. The reason for hospitalization in 10 (1.6%) patients was decompensation of arterial hypertension, acute heart failure was registered in 8 (1.3%) patients and other causes in 22 (3.4%) patients (Fig. 1).

According to our study, in the group of hospitalized patients, the score on the 2MACE scale was 1.7 times (p = 0.0001) higher (corresponding to 2.0 ± 1.8 points), 11.9% more often than in the group without hospitalizations, warfarin was prescribed and 12.3% less frequently than direct OACs (p=0.0001).

The fatal outcome group consisted of 70 (11%) patients, whose age was on average 4 years older (p=0.0002) than in the surviving group of 568 (89%) patients. Patients with a fatal outcome had 19.9% (p=0.0001) and 37.7% (0.0001) higher scores on the CHA₂DS₂-VASc and 2MACE scales, respectively. Patients with a fatal outcome were more frequently prescribed warfarin and less frequently direct OACs (p=0.0355) (Table 1).

The main cause of death in 30 (4.7%) patients was CHD, in two cases with the development of myocardial infarction. Ischemic stroke caused death in 7 (1.1%) patients, hemorrhagic stroke - in 3 (0.5%) patients. Non-cardiac causes of death were registered in 26 (4.1%) cases, COVID-19 infection was detected in 2 (0.3%) patients with AF (Fig. 2).



Fig. 2. Causes of death in patients with atrial fibrillation (*n*=70). *Note: AMI - acute myocardial infarction.*

DISCUSSION

An analysis was made of domestic AF registries, in which elderly patients, mostly women, took part (Table 2). When comparing the AF Register (Kemerovo) with the REKVAZA outpatient registry (Ryazan, 2012-2013), there is an almost identical risk of thrombotic complications. In our registry, in most cases, there were patients with paroxysmal AF; on the contrary, patients with permanent AF predominated in the REQUAZA and REQUAZA-AF registries [15, 16].

In the REKVAZA registry (2012-2013), only 22 (4.2%) patients received anticoagulants, 329 (62.0%) patients received aspirin, while 179 (33.8%) patients were without any antithrombotic therapy [16]. In our registry, 631 (99%) patients took anticoagulants and only 6 (1%) patients took aspirin. In our register, patients were included 7-8 years later. Obviously, over the years, approaches to prescribing anticoagulant therapy have changed, which is consistent with the data of other authors [17].

The study compared our results with the AF registry from St. Petersburg (2014-2018), which, according to clinical, anamnestic, demographic data and the risk of hemorrhagic complications, was more consistent with the AF registry (Kemerovo) (Table 2). It should be noted that in the St. Petersburg registry, 1275 (70%) patients were taking anticoagulants, and direct OACs were used in 87.4% of cases, of which rivaroxaban was prescribed in 52.6%, apixaban - in 34.1%, dabigatran in 13.3% of patients with AF, and 278 (15.3%) patients took aspirin [18].

A high percentage of warfarin therapy (33%) in the Kemerovo registry may be associated with greater availability of the medication and financial problems in the purchase of direct OACs by patients, as well as insufficient awareness of physicians about the issues of OACs prescribing. At the same time, in the Register of AF (Kemerovo), only 6 patients, which amounted to 1%, took aspirin, and in the register from St. Petersburg, 278 (15.3%) patients with AF took aspirin. Noteworthy is the low percentage (5.1%) of catheter ablations performed

Table 2.

Register, year	Register, St. Petersburg, 2014-2018	REKVAZA-AF, Yaroslavl, 2013	Kemerovo register, 2019-2020	REKVAZA, 2012-2013
Number of patients, n	1822	215	638	530
Average age, years	69.8±11.7	73.9±11.1	68.2±4.5	72.3±10.1
Woman, %	58.8	63.3	56.7	67.0
First identified AF, %	-	4.2	-	-
Paroxysmal AF, %	65.6	26	48.8	26.4
Persistent AF, %	8.4	4.2	21.6	24.7
Long-term persistent AF, %	-	-	6.9	-
Permanent AF, %	25.5	65.6	22.7	43.2
Unspecified AF, %	0.5	-	-	5.7
CHA ₂ DS ₂ -VASc, score	3.7±1.8	-	4.82±1.8	4.62±1.57

Comparative characteristics of atrial fibrillation registers [15-19]

both in the registry from St. Petersburg [18] and in our AF registry, where it was 9%.

Particular attention should be paid to the analysis of actually prescribed and recommended anticoagulant therapy when using PPVR, where rivaroxaban turned out to be the drug of choice, which, when taken once, is preferable in patients with low compliance to treatment [19, 20]. However, in real clinical practice, in most cases, warfarin was prescribed, which is consistent with the results obtained in the REKVAZA registry [16] and contradicts the opinion about the preferred prescription of OACs in non-valvular atrial fibrillation [21].

It is impossible to ignore the fact that AF registry studies have limited information on the frequency of hospitalizations and deaths. In some of them, for example, in the AF Register (Moscow, 2012-2013), at the outpatient stage, one non-fatal stroke and 13 adverse events were registered within a year after discharge from the hospital, among which the cause of death was known only in 10 patients, namely: ischemic stroke - in 4 (2.1%), cerebral hemorrhage - in 2 (1.1%), decompensation of heart failure - in 2 (1.1%) patients, one case of mesenteric thrombosis and one case of oncological disease, which is by 0.6%, respectively [22].

When analyzing the causes of hospitalizations in patients with AF, we were able to compare our data with the RECUR-AF outpatient register of the Kursk region (2015-2016), in which the overall rate of hospitalizations was 1.7 times higher than in our AF Register [23].

1. Stewart S, Hart CL, Hole DJ, et al. Population prevalence, incidence, and predictors of atrial fibrillation in the Renfrew. Paisley study. *Heart.* 2001;86: 516-521. https:// doi.org/10.1136/heart.86.5.516.

2. Go AS, Hylek EM, Phillips KA, et al. Prevalence of diagnosed atrial fibrillation in adults: national implications for rhythm management and stroke prevention: the AnTicoagulation and Risk Factors in Atrial Fibrillation (ATRIA) Study. *JAMA*. 2001;285: 2370-2375. https://doi. org/10.1001/jama.285.18.2370.

3. Khidirova LD, Yakhontov DA, Zenin SA Atrial fibrillation in comorbid patients depending on the treatment regiment. *Complex Issues of Cardiovascular Diseases*. 2019;8(2): 21-29. (In Russ.). https://doi. org/10.17802/2306-1278-2019-8-2-21-29.

4. Naccarelli GV, Varker H, Lin J, et al. Increasing prevalence of atrial fibrillation and flutter in the United States. *Am J Cardiol.* 2009;104: 1534-1539. https://doi.org/10.1016/j. amjcard.2009.07.022.

5. Miyasaka Y, Barnes ME, Gersh BJ Secular trends in incidence of atrial fibrillation in Olmsted Country, Minnesota, 1980 to 2000, and implications on the projections for future prevalence. *Circulation*. 2006;114: 119-125. https://doi.org/10.1161/CIRCULATIONAHA.105.595140.

6. Camm AJ, Breithardt G, Crijns H Real-life observations of clinical outcomes with rhythm- and rate-control therapies for atrial fibrillation RECORDAF (Registry on Cardiac Rhythm Disorders Assessing the Control of Atrial Fibrillation). *J Am Coll Cardiol.* 2011;58(5): 493-501. https://doi.org/10.1016/j.jacc.2011.03.034.

CONCLUSION

The analysis of clinical and anamnestic data, peculiarities of anticoagulant therapy prescribing, and the causes of adverse events (hospitalization, death) was carried out according to the register of patients with AF (Kemerovo) at the outpatient stage. A 'portrait' of a patient with AF is presented, which is characterized by a mean age of 68 years, a high risk of thrombotic complications and low compliance to treatment. Among those examined, the most commonly prescribed anticoagulant was warfarin, although, taking into account the recommendation of PPVR, the choice of the factor Xa inhibitor of the coagulation system, rivaroxaban, was preferable.

Our study revealed a small proportion of patients who underwent catheter ablation, with paroxysmal atrial fibrillation being the leading cause of hospitalization. The main cause of death in patients with AF turned out to be coronary artery disease, and therefore, during dynamic monitoring of this category of patients, it is necessary to take into account the risk of coronary events according to the 2MACE scale, as well as to determine the level of patient compliance to treatment using the Morisky-Green questionnaire in order to prescribe an effective and safe anticoagulant therapy.

Undoubtedly, the development of measures for the prevention of hemorrhagic and thrombotic complications, the more active introduction of training programs and the use of Internet technologies, the use of a mobile application for personalized selection of an anticoagulant and improving the quality of medical care are relevant.

REFERENCES

7. Alam M, Bandeali SJ, Shahzad SA Real-life global survey evaluating patients with atrial fibrillation (REAL-ISE-AF): results of an international observational registry. *Expert Rev Cardiovasc Ther.* 2012;10(3): 283-291. https://doi.org/10.1586/erc.12.8.

8. Nieuwlaat R, Capucci A, Camm AJ Atrial fibrillation management: a prospective survey in ESC member countries: the Euro Heart Survey on Atrial Fibrillation. *Eur Heart J.* 2005;26(22): 2422-2234. https://doi.org/10.1093/eurheartj/ehi505.

9. Reshetko OV, Sokolov AV, Furman NV Analysis of antithrombotic therapy of atrial fibrillation in international and Russian registries. *Quality clinical practice*. 2019;1: 83-96. (In Russ.). https://doi.org/10.24411/2588-0519-2019-10066.

10. Lukianov MM, Boycov SA, Yakushin SS, et al. Diagnosis, treatment, combined cardiovascular pathology and concomitant diseases of patients with a diagnosis of atrial fibrillation in conditions of real outpatient practice (according to the register of cardiovascular diseases REQUAZA). *Rational Pharmacotherapy in cardiology*. 2014;10(4): 366-377. (In Russ.). https://doi.org/10.20996/1819-6446-2014-10-4-366-377.

11. Stepina EV, Lukanova MM, Bichurina MA, et al. Therapy with oral anticoagulants in patients with atrial fibrillation in combination with arterial hypertension, ischemic heart disease, chronic heart failure at the hospital and ambulator stages of treatment according to the REQUAZA-CLINIC register. *Rational Pharmacotherapy in Cardiology.* 2017;13(2): 146-154. (In Russ.). https://doi. org/10.20996/1819-6446-2017-13-2-146-154.

12. Marcevich SU, Navasardan AR, Kutishenko NP, et al. Experience in studying atrial fibrillation based on the PROFILE register. *Cardiovascular therapy and prevention*. 2014;13(2):35-39. (In Russ.). https://doi.org/10.15829/1728-8800-2014-2-35-39.

13. Linchak RM, Ovchinokova UV, Kuzovlev AN Prevalence and analysis of antithrombotic therapy in atrial fibrillation in Russia. *Bulletin of SurSU. The medicine*. 2019;4(42): 14-15. (In Russ.). https://doi.org/10.34822/2304-9448-2019-4-14-20.

14. Gorbunova EV, Duvanova SP, Filimonov KM, et al. Effektivnost' modulya prinyatiya reshenij v personalizirovannom vybore antikoagulyanta. *Kardiologiya*. 2021;61(3): 18-22. (In Russ.). https://doi.org/10.18087/ cardio.2021.3.n1511.

15. Yakusevich VV, Pozdnakova EM, Yakusevich VV, et al. Outpatient with atrial fibrillation: key characteristics. The first data of the REKVAZA FP register - Yaroslavl. *Rational Pharmacotherapy in Cardiology.* 2015;11(2): 149-152. (In Russ.). https://doi.org/10.20996/1819-6446-2015-11-2-149-152.

16. Boycov SA, Lukanov MM, Yakushin SS, et al. Registry of Cardiovascular Diseases (RECVAZA): diagnostics, combined cardiovascular pathology, concomitant diseases and treatment in real outpatient practice. *Cardiovascular therapy and prevention*. 2014;13(6): 44-49. (In Russ.). https://doi. org/10.15829/1728-8800-2014-6-3-8.

17. Rychkov AYu, Khorkova NYu, Minulina AV How has the use of anticoagulants changed in patients with non-valvular atrial fibrillation. *Journal of Arrhythmology*. 2017;87: 5-6. (In Russ.).

18. Ionin VA, Barashkova EI, Filatova AG, et al. Atri-

al fibrillation in a cohort of outpatients in St. Petersburg: incidence, risk factors, antiarrhythmic therapy and prevention of thromboembolic complications. *Arterial hypertension*. 2020;26(2): 192-201. (In Russ.). https://doi.org/10.18705/1607-419X-2020-26-2-192-201.

19. Yavelov IS. Rivaroxaban in prevention of stroke in elderly patients with non-valvular atrial fibrillation. *Kar-diologiia*. 2019;59(12S): 4-11. (In Russ.). https://doi. org/10.18087/cardio.n892.

20. Turov AN, Panfilov SV, Tschiglinzeva OV The Efficacy, Safety and Adherence to Treatment when New Anticoagulants Taking in Over 75 Years Old Patients with Atrial Fibrillation. *Rational Pharmacotherapy in Cardiology.* 2020;16(1): 10-18. (In Russ.). https://doi. org/10.20996/1819-6446-2020-20-07.

21. Shubik YuV, Medvedev MM, Mikhaylov EN, et al. Management of atrial fibrillation in Russia: real clinical practice and current clinical guidelines. *Journal of Arrhythmology*. 2021;28(2): 55-63. (In Russ.). https:// doi. org/10.35336/VA-2021-2-55-63.

22. Melechov AV, Gendlin GE, Dadashova EF, et al. Dynamics of the use of antithrombotic drugs in patients with atrial fibrillation: own data and a review of domestic registries. *Russian medical journal*. 2017;23(3): 116-126. (In Russ.). https://doi.org/10.18821/0869-2106-2017-23-3-116-126.

23. Polshakova IL, Povetkin SV The structure of drug therapy and clinical characteristics of patients with atrial fibrillation according to the RECUR-AF study. *Rational Pharmacotherapy in Cardiology.* 2018;14(5): 733-740. (In Russ.). https://doi.org/10.20996/1819-6446-2018-14-5-733-740.