

# Evaluating compliance with guidelines for the prevention of thromboembolic complications in hospitalised patients with atrial fibrillation

Ocena zgodności z wytycznymi leczenia stosowanego  
w ramach prewencji powikłań zakrzepowo-zatorowych  
u hospitalizowanych chorych z migotaniem przedsionków

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## Abstract

**Introduction.** Atrial fibrillation (AF) is the most common supraventricular arrhythmia. It results in an increased frequency of thromboembolic complications and a higher death rate. The frequency of arrhythmia is steadily increasing, and a sustained growth in the number of patients with AF can be expected in the coming years. Thromboembolic episodes are the most serious complications of AF. Anticoagulant treatment, based on recommendations, is considered to be the priority action in patients with AF.

The aim of this paper is to evaluate compliance with guidelines for the prevention of thrombosis, recommended on discharge, in patients with non-valvular AF, who were hospitalised in a cardiology ward.

**Methods and materials.** 4,099 patients with non-valvular AF, who had been hospitalised and discharged from a cardiology ward between 2004 and 2012, were subject to a retrospective analysis. We assessed the risk of thromboembolic (via CHADS<sub>2</sub> score) and haemorrhagic (via HAS-BLED score) complications, as well as data on comorbid conditions and the recommended anticoagulant prevention. The compliance of the prevention of thromboembolic complications with the guidelines was assessed according to the applied anticoagulant and antiplatelet treatment in particular groups of thromboembolism risk.

**Results.** The average age of the examined group was 70.6 (± 10.9) years. AF co-existed most frequently with the following diseases: hypertension (74.8%), ischaemic heart disease (56.7%), and heart failure (54.8%). A low risk of thromboembolic complications was reported in 7.2% of patients, whereas 25.4% were rated as moderate risk, and 67.4% as high thromboembolic risk. A high risk of bleeding was reported in 34.6% of patients. In the prevention of thromboembolic complications, an oral anticoagulant, in monotherapy or in combination with antiplatelet drugs, was recommended for 64% of patients on discharge. According to the guidelines, 66.9% of patients from the examined group qualified for the prevention of thromboembolic complications: 62.4% of those with a high risk of stroke, 86% of those with a moderate risk, and 41.1% of those without stroke risk factors. The highest percentage of patients treated pursuant to the guidelines in the chosen clinical situations was to be seen among patients after a thromboembolic episode (70.8%). We found that in 73.8% of patients aged 65–74, and in 55.2% of patients over the age of 80, anticoagulant prevention was applied in accordance with the guidelines.

**Conclusions.** On discharge from hospital, nearly two-thirds of patients with AF were subjected to the prevention of thromboembolic complications in accordance with the guidelines. Most often they belonged to the group of moderate risk, and least often to the group without thromboembolic risk factors. A high percentage of patients treated in line with the guidelines was seen in the patients who recovered from a thromboembolic episode. The percentage of patients with AF who were subjected to anticoagulant treatment in accordance with the guidelines decreased with age.

Key words: atrial fibrillation, CHADS<sub>2</sub>, scale, stroke

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## Introduction

Atrial fibrillation (AF) causes a five-fold increased risk of stroke among patients with non-valvular AF [1]. The annual incidence of stroke among subjects with AF who were not treated with anticoagulants amounts to 4.9–5.7% [2, 3]. Thromboembolic complications are characterised by a poorer prognosis and a higher death rate among patients with arrhythmia than among those with sinus rhythm [4]. The use of prevention of thromboembolic complications among patients with AF is determined upon their thromboembolism risk, which depends on their age, sex and comorbid conditions. The CHA<sub>2</sub>DS<sub>2</sub>VASc score, which is the extension of the previously used CHADS<sub>2</sub> [Congestive heart failure, Hypertension, Age  $\geq$  75 ( $\times$  2), Diabetes, Stroke ( $\times$  2), vascular disease, age 65–74, sex category] score [5, 6], is currently applied to assess the thromboembolism risk. The risk of thromboembolic complications is negligible in those patients with isolated AF (primarily patients under the age of 60), without comorbid conditions [7]. However, the number of patients with isolated AF constitutes only 2–15% of the overall number of patients suffering from this presentation of arrhythmia [8–11]. The identification of patients classified as having a high risk of thromboembolic complications, and thereby qualifying for anticoagulant treatment, has changed in recent years. According to the recommendations of the highest grade and the European guidelines from 2006 and 2010 referring to the treatment of patients with AF, anticoagulant or antiplatelet therapy (depending on the stroke risk) was recommended for all patients with AF with the exception of those with isolated arrhythmia or in the presence of contradictions [5, 12].

The 2012 guidelines of the European Society of Cardiology (ESC) represent a slightly different point of view with regard to the prevention of thromboembolic complications in patients with AF compared to the two previously mentioned documents. Based on the abundant evidence of the efficacy of oral anticoagulants (OAC) in preventing thromboembolic complications, as well as on the safety of applied therapy using new anticoagulants, the ESC recommended the identification of patients with AF who do

not qualify for the prevention of thrombosis [7]. The latest recommendations underline that the primary goal is the identification of patients classified as having a “really low” thromboembolism risk, who do not qualify for anticoagulant treatment. All other patients, with the exception of those with contraindications, should undergo the therapy [6].

The aim of this paper is to evaluate compliance with the guidelines for applied prevention of thromboembolic complications in hospitalised patients with AF.

## Material and methods

Medical data on 4,099 patients discharged from the Cardiology Clinic between 2004 and 2012 who had been diagnosed with AF was subject to retrospective analysis. If a patient had been hospitalised more than once, the data referring to their final hospital stay was analysed. The two criteria for exclusion from the study were valvular AF or the patient’s death during hospitalisation.

The study group consisted of patients hospitalised between 2004 and 2012. At this time, the CHADS<sub>2</sub> score was the one primarily used. For this reason, the CHADS<sub>2</sub> score was applied in this paper for the assessment of thromboembolism risk. In the CHADS<sub>2</sub> score, 0 points indicates a low risk of thromboembolism, 1 point indicates an intermediate risk, and 2 points or more indicates a high risk.

In assessing the risk of bleeding complications, the following factors were considered to increase the risk of bleeding according to the HAS-BLED score: anaemia, typically defined as haemoglobin levels of less than 13 g/dL in women and less than 12 g/dL in men, and thrombocytopenia (a concentration of blood platelets of less than 150 G/L). A time in therapeutic range (TTR) value of less than 60% was considered the unstable International Normalised Ratio (INR). Valvular AF was defined as AF in patients with valve prosthesis or severe mitral stenosis.

The following factors were categorised as being compliant with the applicable guidelines:

- a lack of antithrombotic and antiplatelet therapy in patients with a low thromboembolism risk;
- antiplatelet drug in monotherapy in patients with a low and an intermediate thromboembolism risk;

- an oral anticoagulant in monotherapy in patients with an intermediate and a high thromboembolism risk and in patients with a low risk in the case of electrical cardioversion, provided that the episode of AF lasted at least 48 hours;
- two antiplatelet drugs in combined therapy in patients with a low and an intermediate thromboembolism risk after acute coronary syndrome and/or percutaneous coronary intervention;
- low-molecular weight heparin (LMWH) in patients with an intermediate and a high thromboembolism risk when bridging therapy was necessary.

The regional Bioethics Committee granted consent to conduct this study (no. 12/2011).

### Statistical analysis

The data derived from the clinical study was subject to statistical analysis with the use of the Chi-square test to approximate the significance of distribution of random variables in single classifications and to evaluate the interdependence of pair of factors in double classifications. The statistical evaluation of the significance of differences was designated with a p value ( $p < 0.05$ ). The calculations were made using Med. Calc Ver. 12.4.0.0 software.

## Results

### Clinical characteristics of patients with AF

In the examined group of 4,099 participants, the number of women was 2,244 (54.7%). The average age of all patients was 70.6 ( $\pm 10.9$ ) years, with an average age for men of 68.2 ( $\pm 11.5$ ) and for women of 73.5 ( $\pm 9.4$ ) years. The most common type of arrhythmia was paroxysmal AF, which occurred in 1,904 patients (46.5%). Permanent AF was observed in 1,768 participants (43.1%), while persistent arrhythmia was diagnosed in 427 participants (10.4%). In the examined group, the following diseases co-existed most frequently with AF: hypertension in 3,067 subjects (74.8%), coronary artery disease in 2,324 subjects (56.7%), and heart failure in 2,247 subjects (54.8%) (as shown in Table 1). Patients suffering from AF were most commonly hospitalised for elective surgeries: implantation/reimplantation of cardiac pacing system (1,422 patients – 34.7%), coronorography or coronary angioplasty (250 patients – 6.1%), and electrophysiological test and/or ablation (57 patients – 1.4%). Due to the exacerbation of a primary disease, 845 patients (20.6%) with AF were hospitalised. The majority of these patients were hospitalised due to heart failure decompensation which occurred in a different mechanism than AF with a high ventricular rate. Acute coronary syndrome caused hospitalisation among 587 patients with AF (14.3%), while an AF attack led to the hospitalisation of 471 patients (11.5%).

**Table 1.** Characteristics of a population with atrial fibrillation

	Number of patients N = 4,099	Percentage of patients [%]
<b>Concomitant diseases</b>		
Hypertension	3,067	74.8
Coronary artery disease	2,324	56.7
Heart failure	2,247	54.8
Impaired renal function (GFR < 60 mL/min)	2,206	53.8
Dyslipidaemia	1,897	46.3
Diabetes	893	21.8
Thyroid disease	667	16.2
Malignancy	173	4.2
Peripheral vascular disease	79	1.9
<b>Previous thromboembolism</b>		
Stroke	434	10.6
Transient ischaemic attack	59	1.4
Other thromboembolism	80	2

GFR – glomerular filtration rate

In the examined group, for 297 participants (7.2%) there was no risk of thromboembolic complications ( $\text{CHADS}_2 = 0$ ). The  $\text{CHADS}_2$  score equalled 1 point in 1,042 (25.4%) and 2 or more points in 2,760 participants (67.4%). According to the HAS-BLED score, a high risk of bleeding was observed in 1,418 (34%), whereas a low risk was observed in 2,681 patients (65.4%). The risk of haemorrhagic complications was compared in groups with low, intermediate, and high thromboembolism risks. A high risk of bleeding (HAS-BLED  $\geq 3$  points) was indicated in five patients (1.7%) without a thromboembolism risk, in 143 patients (13.7%) with an intermediate thromboembolism risk, and in 1,256 patients (45.5%) with a high stroke risk.

### Antithrombotic prophylaxis in the study group

In the prevention of thromboembolic complications, OAC was recommended on discharge for 2,368 (57.8%) patients in monotherapy and for 259 (6.3%) patients in combination with antiplatelet drugs. In the study group, 863 (21.1%) patients received the antiplatelet drug [acetylsalicylic acid (ASA) or clopidogrel] in monotherapy, while 279 (6.8%) participants received two antiplatelet drugs in combination therapy. LMWH was recommended on discharge for 87 patients (2.1%), whereas 243 patients (5.9%) received no antiplatelet and anticoagulant treatment. The prevention of thromboembolic events in patients with AF who were discharged from the hospital in particular groups with

**Table 2.** Anticoagulant prophylaxis recommended at discharge, and the risk of thromboembolic and haemorrhagic complications

Anticoagulant prophylaxis	Thromboembolism risk			P value	Bleeding risk		
	Low CHADS <sub>2</sub> score = 0 N = 297	Moderate CHADS <sub>2</sub> score = 1 N = 1,042	High CHADS <sub>2</sub> score ≥ 2 N = 2,760		Low HAS-BLED score = 0–2 N = 2,681	High HAS-BLED score ≥ 3 N = 1,418	P value
OAC in monotherapy or with antiplatelet drug(s) N = 2,626	180 (60.6%)	658 (63.2%)	1,788 (64.8%)	< 0.0001	1,792 (67.8%)	834 (58.9%)	< 0.0001
Antiplatelet drug in monotherapy or two antiplatelet drugs in combined therapy N = 1,142	82 (27.6%)	297 (28.5%)	764 (27.7%)	< 0.0001	683 (25.5%)	459 (32.4%)	< 0.0001
Low-molecular weight heparin N = 87	7 (2.4%)	17 (1.6%)	63 (2.3%)	< 0.0001	52 (1.9%)	35 (2.5%)	0.2469
Without anticoagulant and antiplatelet therapy N = 243	28 (9.4%)	70 (6.7%)	145 (5.2%)	< 0.0001	154 (5.7%)	89 (6.3%)	0.4806

CHADS<sub>2</sub> – Congestive heart failure, Hypertension, Age ≥ 75 (× 2), Diabetes, Stroke (× 2), vascular disease, age 65–74, sex category; N – number of patients; HAS-BLED – Hypertension, Abnormal renal/liver function, Stroke, Bleeding history or predisposition, Labile international normalised ratio, Elderly (> 65 years), Drugs/alcohol concomitantly; OAC – oral anticoagulants

thromboembolism and bleeding risks is shown in Table 2. In a group of 1,904 patients with paroxysmal AF, OAC was recommended in monotherapy or in combination therapy for 1,036 patients (54.4%) on discharge, while antiplatelet drugs were applied for 733 patients (38.5%) on discharge. By means of comparison, OAC was prescribed to 1,289 patients (72.9%) with permanent AF in the prevention of thromboembolic complications, whereas antiplatelet drugs were prescribed to 392 patients, which constituted 22.2% of those with permanent AF who were discharged from the hospital. The highest percentage of participants discharged with recommendations for OAC was observed among patients with permanent AF – 358 (83.3%). For the purpose of sinus rhythm restoration by means of electrical conversion, 240 patients with permanent AF were admitted to the hospital. This amounted to 52.6% of the examined subjects with this presentation of AF. 49 patients with permanent AF (11.5%) received on discharge antiplatelet drug(s), while 87 patients (4.9%) with paroxysmal AF, 20 (4.7%) with permanent AF and 87 (4.9%) with persistent arrhythmia were discharged without any prevention of thrombosis.

### The evaluation of compliance with the guidelines for the prevention of thromboembolic complications

We concluded that, in accordance with the guidelines, the prevention of thromboembolic complications was applied for 2,740 out of 4,099 patients, which amounted to 66.9% of participants from the study group. Compliance of the prevention of thromboembolic complications recommended on discharge was reported in:

- 123 patients (41.1%) with a low (CHADS<sub>2</sub> = 0) thromboembolism risk;
- 896 patients (86%) with an intermediate (CHADS<sub>2</sub> = 1) thromboembolism risk;
- 1,721 patients (62.4%) with a high (CHADS<sub>2</sub> ≥ 2) thromboembolism risk (as shown in Table 3).

In the group of examined patients, the highest level of compliance of prescribing drugs with the applicable guidelines was observed among the subjects receiving OAC in monotherapy. OAC, recommended in monotherapy according to the guidelines, was prescribed to 93.4% of patients. However, this procedure was validated only in the 11.5% of patients who did not receive any prevention of thromboembolic complications. The application of antiplatelet therapy in combination with ASA and clopidogrel (without OAC) was compliant with the applicable guidelines only in 19.9% of patients (Table 3).

Table 4 shows anticoagulant treatment in selected groups of patients. In the study group, the majority of patients treated with anticoagulants in line with the guidelines were aged 65–74 (940 participants – 73.8%).

### Discussion

Our study has shown that two-thirds of hospitalised patients with AF received anticoagulant treatment in accordance with the guidelines based on the stratification of thromboembolism risk. The compliance of the applied therapy with the guidelines was at its highest level (86%) in the group of patients with an intermediate thromboembolism risk. Apparently, this results from the fact that it is possible

**Table 3.** Compliance with applicable guidelines regarding anticoagulant prophylaxis in patients of low, intermediate and high risks of thromboembolic events

Thromboembolism risk	Without treatment N = 243	ASA or clopidogrel* in monotherapy N = 863	ASA + clopidogrel N = 277	Antiplatelet drug(s) + OAC N = 258	OAC in monotherapy N = 2,368	LMWH N = 87	N [%]
Low (CHADS <sub>2</sub> = 0) N = 297	28	65	2 + 15**	6 + 6**	159 + 9***	7	123 (41.1)
Intermediate (CHADS <sub>2</sub> = 1) N = 1,042	70	227	30 + 40**	34 + 20**	604	12 + 5****	896 (86)
High (CHADS <sub>2</sub> ≥ 2) N = 2,760	145	571	190	100 + 92**	1,599	33 + 30 <sup>#</sup>	1721 (62.4)
Patients treated according to the guidelines	28 (11.5)	292 (33.8)	55 (19.9)	118 (45.7)	2,212 (93.4)	35 (40.2)	

\*In the case of intolerance to acetylsalicylic acid (ASA); \*\*after acute coronary syndrome; \*\*\*in the case of electrical cardioversion, provided that the episode of atrial fibrillation lasted at least 48 hours; <sup>#</sup>in the case of bridging therapy if necessary; N – number of patients; OAC – oral anticoagulant; LMWH – low-molecular weight heparin; CHADS<sub>2</sub> – Congestive heart failure, Hypertension, Age ≥ 75 (× 2), Diabetes, Stroke (× 2), Vascular disease, Age 65–74, Sex category  
Text in red is consistent with treatment guidelines

**Table 4.** Compliance prevention of thromboembolism with the guidelines in the course of atrial fibrillation in selected groups of patients

Thromboembolism risk Selected groups of patients	Patients treated according to the guidelines N [%]			Patients treated according to the guidelines N [%]
	Low risk (CHADS <sub>2</sub> = 0)	Intermediate risk (CHADS <sub>2</sub> = 1)	High risk (CHADS <sub>2</sub> ≥ 2)	
Age 65–74 years	29 (44.6)	396 (85.9)	515 (40.4)	940 (73.8)
Stroke/TIA/other thromboembolism	0	0	394 (70.8)	394 (70.8)
Heart failure	0	180 (69.5)	1,276 (56.8)	1,535 (68.3)
Hypertension	0	505 (74.9)	1,566 (51)	2,071 (67.5)
Female gender	39 (43.3)	302 (77.4)	884 (47.6)	1,225 (66)
Diabetes	0	24 (92.3)	559 (62.6)	583 (65.3)
Vascular disease	14 (28.6)	201 (75.9)	506 (42.7)	721 (60.8)
Malignancy	4 (33.3)	26 (74.3)	74 (42.8)	104 (60.1)
Age ≥ 75 years	0	69 (84.1)	963 (56.6)	1,032 (59.1)
Age ≥ 80 years	0	28 (65.1)	456 (52)	484 (55.2)

N – number of patients; CHADS<sub>2</sub> – Congestive heart failure, Hypertension, Age ≥ 75 (× 2), Diabetes, Stroke (× 2), Vascular disease, Age 65–74, Sex category; TIA – transient ischaemic attack

to apply OAC or ASA to a group of patients with AF whose CHADS<sub>2</sub> score is 1 point. It was reported that 62% of subjects with a high risk of thromboembolic complications received a proper anticoagulant therapy. The highest percentage of improper prevention of thrombosis was seen among patients with a low stroke risk. In a group of patients whose CHADS<sub>2</sub> score was 2 or more points, the number who received proper treatment in this study was the same as that indicated in the GARFIELD Registry (62%) [13]. The average age of patients in the GARFIELD Registry (currently the biggest European registry of patients with AF) was 70 years, whereas the average age of patients

who participated in our study was 71 years. Compared to the GARFIELD Registry, coronary artery disease occurred more often in patients who participated in the study (57% vs. 19%), as did heart failure (55% vs. 21%). By means of comparison, in the Euro Heart Survey on Atrial Fibrillation, 58% of subjects were treated with anticoagulants pursuant to the guidelines [14].

Taking into consideration the fact that the patients participating in the study were older (the average age of patients in the European registry was 68) and suffered from more comorbid conditions than did subjects in the Euro Heart Survey (hypertension – 62%, coronary artery



disease – 32%), the number of patients with AF treated properly with anticoagulants in the Polish medical centre was high in relation to the European population. In the present study, OAC in monotherapy was received by 93% of patients in accordance with the guidelines. The percentage of patients treated properly by means of combined therapy (*i.e.* with OAC and one or two antiplatelet drugs) was lower (46%). In the Euro Heart Survey, OAC treatment was received by 67% of patients to whom it was recommended, and by 49% of patients who did not qualify for prevention of thrombosis [14].

In the present study, 5.2% of patients with a high stroke risk received no therapy, whereas in the European registry patients with a high thromboembolism risk without anticoagulant treatment constituted 7% of all subjects [14]. The percentage of patients classified as having a high stroke risk and treated with OAC was higher in German registries than in the present study. OAC was applied to 71% of patients in both the AFNET Registry [15] and the ATRIUM study [16]. However, the number of patients treated with OAC without a recommendation for such therapy was also high, and amounted in both studies to nearly 50%.

In the present study, the percentage of patients who received OAC recommendations was 64%. Table 5 illustrates the application of OAC in studies published in recent years [13–24]. A sustained increase in the number of patients with AF treated with OAC, as well as excessive OAC recommendations for patients with a low disease risk, can be observed. The high percentage of patients with a low risk of thromboembolic complications who receive OAC is notable in both the present study and the studies conducted by other authors.

According to the guidelines, the most significant factor upon which OAC is recommended is thromboembolism risk evaluated by means of CHADS<sub>2</sub> and CHA<sub>2</sub>DS<sub>2</sub>-VASc scores [5, 6].

As documented in this paper, the implementation of a simple algorithm of applying OAC to patients with a high and an intermediate thromboembolism risk into clinical practice is still difficult. In the present study, OAC in monotherapy or in therapy combined with antiplatelet drugs was recommended for 61% of patients without a thromboembolism risk. In the ATRIUM study, up to 66.8% of patients without risk factors in CHADS<sub>2</sub> score received OAC [16]. Waldo et al. [17] indicated the use of OAC among participants with a low stroke risk in 40% of hospitalised subjects. Chae et al. [25] demonstrated the application of OAC in 36% of patients with a low thromboembolism risk in a group of 3,086 hospitalised patients with AF. The recommendation of OAC for patients without a thromboembolism risk factors results in the unnecessary risk of bleeding complications.

**Table 5.** Results of using oral anticoagulants in the prevention of thromboembolic complications of atrial fibrillation (based on [13–24])

Study	Study period	Oral anticoagulants use [%]
Waldo [17]	2002	55
Agarwal [18]	2003–2004	56
Euro Heart Survey [14]	2003–2004	63
EXAMINE-AF [19]	2004–2005	64
AFNET [15]	2004–2006	59.6
PINNACLE [20]	2008–2009	55.1
ATRIUM [16]	2009	83
Rodríguez-Mañero [21]	2009	62.7
Scowcroft [22]	2000–2009	45.6
Bednarski [23]	2006 and 2010	39
GARFIELD [13]	2009–2011	57
Cowan [24]	2009–2012	54.7
Present study	2004–2012	64

In the present study, one of the highest results of therapy compliant with the guidelines was reported among patients after thromboembolic episodes. Up to 71% of those who recovered from a stroke, transient ischaemic attack (TIA) or systemic embolism received OAC. In the ATRIA (Anticoagulation and Risk Factors in Atrial Fibrillation) study, the number of patients after a stroke who received anticoagulant therapy was even higher and amounted to 77% [26]. However, in the present study, one-third of patients after a thromboembolic episode still received no effective protection from the recurrence of stroke. The thromboembolism risk among these patients was one of many factors taken into consideration while recommending the prevention of thromboembolic complications. In the majority of patients after stroke (primarily over 80 years of age) who did not receive OAC, the risk of bleeding was high. In a registry of 81,381 patients with AF over 60 years of age, the number of patients receiving OAC after a thromboembolic episode was also reported to decrease with age [22]. The following percentage of patients treated with OAC was observed among patients after a stroke or TIA in the particular age groups: 60–69, 66%; 70–79, 59%; and over 80, 16%. OAC was received by a total of 34% of patients with AF after a thromboembolic episode [22].

Patients of advanced age, something which increases the risk of thromboembolic and simultaneously bleeding complications, require particular attention when considering anticoagulant treatment. In the present study, one in five patients was over 80 years old. The application of

OAC was recommended for 95% of patients at the age of 81 or more, whereas only 55.2% of them received the anticoagulant. Results differing from those obtained in the present study were achieved in the PINNACLE Registry of American patients, which included 9,113 patients with AF rated as having either an intermediate or a high risk of thromboembolic complications [20]. The age of 81 plus was a predictive factor for OAC recommendations, and increased the chance of its application by 17%. Spanish researchers proved in their study that a positive improvement has been made in recent years in the anticoagulant treatment of patients aged over 80 [21]. In Spain, 24% of octogenarians received OAC in 1999, whereas in 2009 this percentage had increased to 38%. Simultaneously, the number of patients in this age group who received antiplatelet drugs to prevent thromboembolic complications of AF has significantly decreased. In this study, advanced age was a predictive factor for avoiding OAC recommendations. It can be assumed that numerous comorbid conditions and disorders of cognitive functions, which are often observed in older patients, as well as the lack of proper care for geriatric patients, which allows for a safe anticoagulant treatment, has contributed to the non-application of anticoagulant therapy to patients aged 81 plus.

### Study limitations

The present study was retrospective and was conducted in one research centre. The study involved patients hospitalised over a period of nine years. During this

time, the standards for the treatment of patients with AF changed on three occasions. Over the years, the characteristics of the patients suffering from arrhythmia, the conditions which co-existed with AF, and the causes of hospitalisation, were also undergoing change. All these factors led to the fact that the examined population was non-homogenous.

### Conclusions

1. Nearly two-thirds of patients with AF were subjected to the prevention of thromboembolic complications on discharge in accordance with the guidelines.
2. Patients with an intermediate thromboembolism risk most often received the prevention of thromboembolic complications in accordance with the guidelines.
3. The lowest level of compliance with the guidelines for anticoagulant treatment was reported among patients with a low thromboembolism risk, most of whom were treated with oral anticoagulants, which led to the risk of bleeding complications.
4. A high percentage of patients with atrial fibrillation who were treated in accordance with the guidelines were patients after a thromboembolic episode.
5. The number of patients with atrial fibrillation receiving anticoagulant drugs in accordance with the guidelines decreases with age.

### Conflict of interest

None declared.

### Streszczenie

**Wstęp.** Migotanie przedsionków (AF) to najczęstsza arytmia nadkomorowa, a jej następstwami są zwiększona zapadalność na powikłania zakrzepowo-zatorowe i wyższe wskaźniki umieralności. Częstość występowania zaburzeń rytmu serca jest coraz większa i oczekuje się również stałego wzrostu liczby chorych z AF. Epizody zakrzepowo-zatorowe są najpoważniejszymi powikłaniami AF, a za najistotniejsze postępowanie w tej grupie pacjentów uważa się leczenie przeciwzakrzepowe zgodne z aktualnymi wytycznymi.

Badanie przeprowadzono w celu oceny zgodności z wytycznymi prewencyjnego leczenia przeciwzakrzepowego zaleczonego w wypisie ze szpitala chorym z niezastawkowym AF, których hospitalizowano na oddziale kardiologii.

**Materiał i metody.** Do retrospektywnej analizy włączono 4099 chorych z niezastawkowym AF, których wypisano z oddziału kardiologicznego po hospitalizacji w latach 2004–2012. Oceniono ryzyko powikłań zakrzepowo-zatorowych (skala CHADS<sub>2</sub>) i krwotocznych (skala HAS-BLED), a także dane dotyczące chorób współistniejących oraz zalecanego w ramach prewencji leczenia przeciwzakrzepowego. Zgodność z wytycznymi w zakresie zapobiegania powikłaniom zakrzepowo-zatorowym oceniono, analizując zastosowane antykoagulanty i leki przeciwplateletowe w grupach chorych obciążonych ryzykiem zakrzepowo-zatorowym o różnym poziomie.

**Wyniki.** Średni wiek w badanej grupie wynosił 70,6 (± 10,9) roku. U chorych z AF występowały następujące choroby współistniejące: nadciśnienie tętnicze (74,8%), choroba niedokrwienna serca (56,7%), niewydolność serca (54,8%). Niskie ryzyko powikłań zakrzepowo-zatorowych stwierdzono u 7,2% chorych, umiarkowane ryzyko — u 25,4%, natomiast wysokie ryzyko — u 67,4% chorych. U 34,6% chorych stwierdzono wysokie ryzyko krwawienia. Przyjmowanie w ramach prewencji powikłań zakrzepowo-zatorowych doustnych antykoagulantów w monoterapii lub w skojarzeniu z lekami przeciwplatekowymi zalecono w wypisie 64% pacjentów. Zgodnie z wytycznymi do prewencyjnego leczenia przeciwzakrzepowego kwalifikowało się 66,9% chorych z badanej grupy — 62,4% chorych obciążonych wysokim ryzykiem udaru, 86% cechujących się umiarkowanym ryzykiem udaru i 41,1% nieobciążonych czynnikami ryzyka udaru. Najwyższy odsetek chorych leczonych zgodnie z wytycznymi odnoszącymi się do danej sytuacji klinicznej obserwowano w grupie chorych po epizodzie zakrzepowo-zatorowym (70,8%). Stwierdzono, że prewencyjne leczenie przeciwzakrzepowe zgodne z wytycznymi stosowano u 73,8% chorych w wieku 65–74 lat i 55,2% chorych powyżej 80 lat.

**Wnioski.** Niemal 2/3 chorych z AF w wypisie ze szpitala zalecono prewencję powikłań zakrzepowo-zatorowych zgodną z wytycznymi. Najwięcej spośród tych osób należało do grupy umiarkowanego ryzyka, a najmniej do grupy nieobciążonej czynnikami ryzyka zakrzepowo-zatorowego. Znaczny odsetek chorych leczonych zgodnie z wytycznymi zaobserwowano w grupie osób, które przeżyły epizod zakrzepowo-zatorowy. Odsetek chorych z AF, którym zalecono leki przeciwzakrzepowe zgodne z wytycznymi, zmniejszał się z wiekiem.

Słowa kluczowe: migotanie przedsionków, CHADS<sub>2</sub>, skala, udar

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