Research Paper

JRSM Cardiovascular Disease
Volume 8: 1–5

DOI: 10.1177/2048004019848273
journals.sagepub.com/home/cvd
SAGE

Pharmaceutical intervention after evaluation of the risk of ictus in elderly patients institutionalized with atrial fibrillation

Alberto Frutos Pérez-Surio[1, 2], Roberto Lozano Ortiz[3] and Alejandro Martínez Crespo[1, 4]

Abstract

Objectives: To evaluate the risk of having a stroke and the risk of bleeding in institutionalized patients with atrial fibrillation. Atrial fibrillation is a common cardiac arrhythmia associated with increased morbidity and mortality. It is necessary to develop pharmacotherapy plans to minimize the risk.
Design: A prospective study.
Setting: Institutionalized patients.
Participants: Inclusion criteria were: patients diagnosed with atrial fibrillation, with or without treatment for the prevention of stroke.
Main outcome measures: The evaluation of the CHA2DS2-VASc criteria was performed. The risk of hemorrhage was assessed using the HAS-BLED scale, based on the risk factors associated with the probability of bleeding.
Results: We included 53 patients (86.4 ± 6.4 years, 30.2% men). Of these, 37 (69.8%) were correctly anticoagulated. Of the remaining, 5 patients (31.2%) did not have any type of anticoagulant or antiaggregant treatment and 11 (68.7%) were treated with antiaggregant alone. The pharmaceutical intervention was performed in patients who did not meet stroke criteria. Of the untreated patients: two died before the intervention, two were recommended to be referred to cardiology and in one there was no intervention because of very advanced age. In the antiaggregant patients, it was decided not to modify the treatment. The reasons were: high risk of bleeding, very advanced age, advanced dementia or terminal illness, moderate risk of stroke, and clotting factor deficiency.
Conclusions: The risk of stroke in elderly patients with atrial fibrillation is high, so it is important to control the risk factors.

Keywords

Cardiovascular agents, atrial fibrillation, stroke, treatment adherence and compliance

Received 3 September 2018; Revised received 27 January 2019; accepted 10 April 2019

Introduction

Atrial fibrillation (AF) it is the most frequent arrhythmia in the population and its prevalence increases with age. It has a high morbidity due to both the direct symptoms and its side effects. Among them, it is worth mentioning that it is an important risk factor for the development of stroke due to thromboembolism (TE). Non-valvular AF increases the risk of stroke by 5, but valvular AF does so by 20. More than three million people in the world suffer a stroke related to

[1]Department of Clinical Pharmacy, University Clinical Hospital Lozano Blesa, Zaragoza, Spain
[2]Department of Microbiology, Preventive Medicine and Public Health, University of Zaragoza, Spain
[3]Department of Clinical Pharmacy, Hospital Real Nuestra Señora de Gracia, Zaragoza, Spain
[4]Department of Clinical Pharmacy, Centro de Rehabilitación Psicosocial Nuestra Señora del Pilar, Zaragoza, Spain

Corresponding author:
Alberto Frutos Pérez-Surio, Hospital Clinico Universitario Lozano Blesa, Avda. San Juan Bosco 15, Zaragoza 50009, Spain.
Email: ajfrutos@unizar.es

AF each year.[1] The risk of stroke is similar for any type of AF (paroxysmal, persistent, or permanent) and for flutter, and in any of them, advanced age is the main risk factor. Seventy-five percent of anterior circulation strokes in patients with AF are cardioembolic.[2]

The prevention of thromboembolic complications is one of the main objectives of the therapeutic strategy of AF, specifically the reduction of thromboembolic risk with the use of antithrombotic treatment based on a specific risk/benefit assessment for each patient. The risk factors for stroke and/or systemic embolism in patients with AF are as follows: history of cerebrovascular accident (CVA), advanced age, diabetes mellitus (DM), arterial hypertension, coronary artery disease, and congestive heart failure (CHF). All patients with AF who present any of these associated risk factors should be treated with antithrombotic medication individualized in each particular case, according to the risk/benefit ratio.

Several instruments have been developed to define the stroke risk of each patient with AF. The recommended one at present is the CHF, hypertension, age > 75, diabetes, prior stroke/transient ischemic attack-vascular disease, age 65–74 years, sex category (CHA2DS2-VASc),[3] that improves the risk definition of its predecessor, chronic heart failure, hypertension, advanced age, diabetes, and prior stroke/transient ischemic attack, which presented limitations, such as a large percentage of patients classified as intermediate risk and the lack of some risk factors such as sex and peripheral vascular disease.This scale is used to determine whether or not the patient requires anticoagulant or antiaggregant treatment. The risk factors are cumulative, and the simultaneous presence of two or more "clinically relevant, not major" risk factors would justify a stroke risk high enough to require anticoagulation.

The wide use of oral anticoagulant in patients with AF, and the risk of bleeding that is implicit, has forced to develop several instruments to predict the risk of bleeding during the first year of anticoagulation. The most used is hypertension, abnormal renal/liver function, stroke, bleeding history or predisposition, labile international normalized ratio (INR), elderly (>65), drugs/alcohol concomitantly (HAS-BLED).[4]This scale allows calculating the risk of bleeding in patients with AF, based on the risk factors associated with the probability of bleeding, and has demonstrated its usefulness in defining high-risk patients, identifying the factors that should be optimized for anticoagulation safe and help in the decision-making process of antithrombotic treatment.

During the last decades, several antithrombotic modalities have been evaluated in this clinical situation: the vitamin K antagonists in adjusted dose, the factor II inhibitor (dabigatran), the factor Xa inhibitors (rivaroxaban, apixaban, and edoxaban).[1] Acetylsalicylic acid and clopidogrel, as antiplatelet agents, are also frequently used alternatives in the elderly.[5] It is necessary to develop quality pharmacotherapy and minimize the intrinsic risk associated with the use of medications.[6]

The aim of this study is to evaluate the risk of presenting a stroke and the risk of bleeding in institutionalized patients in dependent elderly residences diagnosed with cardiac arrhythmia due to atrial fibrillation (CAAF).

Material and methods

Prospective study conducted between February 2018 and April 2018 in a total of 414 patients institutionalized in three RPMD dependent on the same Hospital Pharmacy Service located in a social health center. The inclusion criteria used were: all patients diagnosed with CAAF, with or without treatment for the prevention of stroke. By reviewing medical records and consulting the pharmacotherapy computer program, the demographic and clinical variables necessary for the study were collected. The selected patients underwent evaluation of the CHA2DS2-VASc criteria,[7] scoring the following variables: heart failure, hypertension, age (>75), DM, previous stroke, vascular disease, and female sex. The result of 1 to 9 points determines the type of risk and percentage of risk of presenting a stroke per year. It is used to determine whether or not the patient requires anticoagulant or antiaggregant treatment.

In the same way, the risk of hemorrhage of these patients was evaluated through the hypertension, abnormal renal and liver function, stroke, bleeding, labile INR, elderly drugs or alcohol (HAS-BLED) scale, based on the risk factors associated with the probability of bleeding: hypertension, renal and hepatic function, previous stroke, history of bleeding, INR labile, age (>65), drugs, and alcohol.

The results determine the type of risk of bleeding and recommendations, as indicated in Table 1. A score of 3 or more points indicates a higher risk of bleeding in one year with the correct anticoagulation and justifies surveillance or a review of the patient, more regularly. The risk is based on the possibility of developing a hemorrhagic process (intracranial hemorrhage, hemorrhage requiring hospitalization or requiring transfusion) or a fall in hemoglobin > 2 g/l.[8]

Results

A total of 53 patients with a mean age of 86.4 ± 6.4 years were included, of which 30.2% were men, who underwent both evaluations: CHA2DS2-VASc and

Table 1. Recommendations according to 2018 Joint European consensus document on the management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous cardiovascular interventions.

Hemorrhagic risk	Stroke risk	Clinical setting	Recommendations according to 2018 Joint European consensus document on the management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous cardiovascular interventions: a joint consensus document of the EHRA, European Society of Cardiology Working Group on Thrombosis, EAPCI, and ACCA endorsed by the HRS, APHRS, LAHRS, and CASSA
Low or moderate	Moderate	Stable CAD	At least 4 weeks (no longer than 6 months): triple therapy of OAC + aspirin 75–100 mg/day + clopidogrel 75 mg/day
(HAS-BLED 0–2)	(CHA2DS2-VASC = 1 in males)		Up to 12th month: OAC and clopidogrel 75 mg/day (or alternatively, aspirin 75–100 mg/day) Lifelong: OAC
	High	Stable CAD	At least 4 weeks (no longer than 6 months): triple therapy of OAC + aspirin 75–100 mg/day + clopidogrel 75 mg/day<
	(CHA2DS2-VASC ≥2)		Up to 12th month: OAC and clopidogrel 75 mg/day (or alternatively, aspirin 75–100 mg/day) Lifelong: OAC
	Moderate	ACS	6 months: triple therapy of OAC + aspirin 75–100 mg/day + clopidogrel 75 mg/day
	(CHA2DS2-VASC = 1 in males)		Up to 12th month: OAC and clopidogrel 75 mg/day (or alternatively, aspirin 75–100 mg/day) Lifelong: OAC
	High	ACS	6 months: triple therapy of OAC + aspirin 75–100 mg/day + clopidogrel 75 mg/day
	(CHA2DS2-VASC ≥2)		Up to 12th month: OAC and clopidogrel 75 mg/day (or alternatively, aspirin 75–100 mg/day) Lifelong: OAC
High	Moderate	Stable CAD	Up to 12th month: OAC and clopidogrel 75 mg/day
(HAS-BLED ≥3)	(CHA2DS2-VASC = 1 in males)		Lifelong: OAC
	High	Stable CAD	4 weeks: triple therapy of OAC + aspirin 75–100 mg/day + clopidogrel 75 mg/day
	(CHA2DS2-VASC ≥2)		Up to 12th month: OAC and clopidogrel 75 mg/day (or alternatively, aspirin 75–100 mg/day) Lifelong: OAC
	Moderate	ACS	4 weeks: triple therapy of OAC + aspirin 75–100 mg/day + clopidogrel 75 mg/day
	(CHA2DS2-VASC = 1 in males)		Up to 12th month: OAC and clopidogrel 75 mg/day (or alternatively, aspirin 75–100 mg/day) Lifelong: OAC
	High	ACS	4 weeks: triple therapy of OAC + aspirin 75–100 mg/day + clopidogrel 75 mg/day
	(CHA2DS2-VASC ≥2)		Up to 12th month: OAC and clopidogrel 75 mg/day (or alternatively, aspirin 75–100 mg/day) Lifelong: OAC

ACCA: European Association of Acute Cardiac Care; APHRS: Asia-Pacific Heart Rhythm Society; CASSA: Cardiac Arrhythmia Society of Southern Africa; EHRA: European Heart Rhythm Association; EAPCI: European Association of Percutaneous Cardiovascular Interventions; HRS: Heart Rhythm Society; LAHRS: Latin America Heart Rhythm Society; OAC: oral anticoagulant.

HAS-BLED; 49.1%, 64.1%, and 33.9% of patients suffered from chronic diseases such as chronic heart failure, high blood pressure (HBP) and DM, respectively; 24.5% had history of stroke or TE and 32.1% had acute myocardial infarction; 20.7% suffered from renal failure and 5.6% from liver failure; 8.7% had a history of bleeding, 20.7% unstable or high INR and 79.2% took other drugs that could predispose to bleeding.

An average CHA2DS2-VASc score of 5.8 ± 1.4 was obtained, with an average risk of presenting a stroke per year of $7.4 \pm 2.7\%$.

One hundred percent of the patients obtained values of risk of stroke between moderate and high, and therefore all should take a prophylactic treatment with anticoagulants, according to the classification of CHA2DS2-VASc used. When carrying out the HAS-BLED analysis, it was found that 26.4% of the patients suffered an intermediate risk of bleeding and 73.6% a high risk of suffering some type of hemorrhage.

The analysis indicated that 69.8% ($n = 37$) of the patients received anticoagulant treatment, that is, they complied with the recommendation. Of these, 75.7% took conventional anticoagulation as acenocoumarol or warfarin, 18.9% took new anticoagulants (apixaban and rivaroxaban), and 5.4% were anticoagulated with chronic low-molecular weight heparins.

The remaining 30.2% ($n = 16$) of the patients did not take the recommended anticoagulant treatment according to the CHA2DS2-VASc scale. Of these, 68.7% ($n = 11$) were treated with antiaggregants (Acetylsalicylic acid or clopidogrel) and 31.3% ($n = 5$) did not take any type of treatment.

In all, 68.7% of patients who did not comply with the recommendations had a risk of ≥ 4 of suffering a cardiovascular event.

Of the untreated patients, 33.3% had a high risk of hemorrhage according to the HAS-BLED criteria, while in those treated with antiplatelet drugs it was 72 (7%).

The pharmaceutical intervention was carried out in patients who did not have any treatment for the prevention of stroke. Of these, 40% ($n = 2$) died before the intervention, for reasons other than the study, in 40% ($n = 2$) the initiation of antiaggregant treatment was evaluated for advanced age and high risk of bleeding. In the remaining 20% ($n = 1$), after consultation with the prescribing physician, it was considered appropriate not to perform any type of intervention (patient of 99 years).

In the patients treated with antiaggregants after review and consultation with the reference physicians, it was decided not to modify the treatment. The main reasons for nonintervention were: high risk of bleeding (27.3%), very advanced age (18.1%), advanced dementia (27.3%), terminal illness (9.1%), moderate risk of stroke (9.1%), and deficit of coagulation factors (9.1%).

Discussion

In the present study, the biometric characteristics and health status of 53 institutionalized patients diagnosed with CAAF and the need for anticoagulant treatment according to the risk of suffering a CVA as well as the risk of hemorrhage have been evaluated. Pharmaceutical intervention in those patients who did not comply with the recommendations.[9] With this, we wanted to demonstrate a part of the great field that encompasses pharmacotherapeutic surveillance in this type of elderly patients – chronic – polymedicated. The importance of pharmacotherapy follow-up in institutionalized patients is essential to avoid an increase in morbidity and mortality.

The work carried out has a series of limitations: the sample is limited; conditioned directly by the population of institutionalized elderly patients with CAAF that exists in the geographical area of study. In addition, since it is a retrospective study, there may be loss of information in the variables collected from the clinical history. Finally, these are elderly patients with many comorbidities and polymedicates, so it is not always possible to follow the anticoagulation recommendations as they are described in the literature.[6]

In this study, it has been shown that the care of the institutionalized elderly patient should not be directed to treat each of the diseases in isolation, but should consider the multi-pathological nature, the presence of geriatric syndromes intimately related to their quality of life, and the needs and expectations of the patient. Furthermore, in this type of patients it is not always possible or convenient to adapt exclusively to what the guidelines recommend, the treatment must be individualized according to the situation, with patient safety always being a priority. Therefore, it is necessary to develop quality pharmacotherapy and minimize the intrinsic risk associated with the use of medications.

Acknowledgements

Not applicable.

Contributorship

AFPS conceived the study. AFPS, RLO, and AMC designed, drafted, and revised the manuscript for intellectual content.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval

Ethical approval for this study was waived by Instituto Aragonés de Ciencias de la Salud (as Institutional Review Board – IRB). Initially, IRB research protocol was sought to protect the rights of human participants, but this research exempt from IRB requirements because the investigators in a manner recorded research involving the collection or study of existing data, documents, and records, the information such that subjects cannot be identified, directly or through identifiers linked to the subjects.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Guarantor

AFPS, RLO, and AMC.

Informed consent

Informed consent was not sought for the present study because the use and analysis of de-identified administrative claims or limited data sets was considered exempt from informed consent, as de-identified information requires a personal health information (PHI) waiver of authorization.

ORCID iD

Alberto Frutos Pérez-Surio https://orcid.org/0000-0001-9962-3387

References

1. Veiga Fernández F, Malfeito Jiménez MDR, Barros Cerviño SM, et al. Oral anticogulation for non-valvular atrial fibrilation in the elderly. *Rev Esp Geriatr Gerontol* 2015; 50: 134–142.
2. Bogousslavsky J, van Melle G, Regli F, et al. Pathogenesis of anterior circulation stroke in patients with nonvalvular atrial fibrillation: The Lausanne Stroke Registry. *Neurology* 1990; 40: 1046–1050.
3. Lip GY, Nieuwlaat R, Pisters R, et al. Refining clinical risk stratification for predicting stroke and thromboembolism in atrial fibrillation using a novel risk factor-based approach: the euro heart survey on atrial fibrillation. *Chest* 2010; 137: 263–272.
4. Pisters R, Lane DA, Nieuwlaat R, et al. A novel user-friendly score (HAS-BLED) to assess 1-year risk of major bleeding in patients with atrialfibrillation: The Euro Heart Survey. *Chest* 2010; 138: 1093–1100.
5. National Institute for Health and Care Excellence (NICE). Guideline CG180, www.nice.org.uk/guidance/cg180 (2014, accessed 9 May 2019).
6. Stroke Prevention in Atrial Fibrillation Study. Final results. *Circulation* 1991; 84: 527–539.
7. Olesen JB, Lip GY, Hansen ML, et al. Validation of risk stratification schemes for predicting stroke and thromboembolism in patients with atrial fibrillation: nationwide cohort study. *BMJ* 2011; 342: d124.
8. Lip GYH, Frison L, Halperin JL, et al. Comparative validation of a novel risk score for predicting bleeding risk in anticoagulated patients with atrial fibrillation: the HAS-BLED (hypertension, abnormal renal/liver function, stroke, bleeding history or predisposition, labile INR, elderly, drugs/alcohol concomitantly) score. *J Am Coll Cardiol* 2011; 57: 173–180.
9. Centro Cochrane Iberoamericano, coordinador. Guía de práctica clínica sobre la prevención primaria y secundaria del ictus. Madrid: Plan de Calidad para el Sistema Nacional de Salud del Ministerio de Sanidad y Consumo. Agència d'Avaluació de Tecnologia i Recerca Mèdiques. Guía de práctica clínica: AATRM No. 2006/15, 2008.