ORIGINAL ARTICLE

Emergency Atrial Fibrillation Registry of the Catalan Institute of Health (URGFAICS): analysis by type of atrial fibrillation and revisits within 30 days

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Objectives. To study the characteristics of patients attending a hospital emergency department (ED) with de novo or previously diagnosed atrial fibrillation (AF). and to determine the rate of revisits for AF within 30 days of discharge.

Methods. Prospective multicenter. observational cohort study of patients aged 18 years or older who came to 5 Catalan EDs with symptoms of AF or who were found to have AF on examination. We recorded demographic information and data related to the acute episode and ED management on the first or other visits within 30 days.

Results. We had complete follow-up data for 1052 of the 1199 patients initially registered. The mean (SD) age was 73 (13) years. and 646 (53.9%) were women. AF had already been diagnosed in 652 (54.4%). Patients with diagnosed AF were older. had more concomitant conditions. and were more likely to be taking antiarrhythmic and/or anticoagulant drugs. Pharmacologic management in the ED was similar. The 30-day revisiting rate was 7.9% . and revisits were more frequent when digoxin was used in the ED and/or calcium channel blockers were prescribed on discharge.

Conclusions. We detected differences between ED patients with de novo FA and previously diagnosed FA. but management of the 2 groups was similar. The 30-day revisiting rate was associated with use of digoxin in the ED and the prescription of calcium channel blockers on discharge.

Keywords: Atrial fibrillation. Hospital emergency health services. Emergency department revisits.

Registro de fibrilación auricular en servicios de urgencias del Institut Català de la Salut (URGFAICS): análisis en función del tipo de fibrilación auricular y de la reconsulta a urgencias relacionada a los 30 días

Objetivos. Estudiar las características de los pacientes que consultan por un episodio de fibrilación auricular (FA) en los servicios de urgencias hospitalarios (SUH). en función de si la FA es *de novo* o conocida previamente. y la reconsulta relacionada con la FA a los 30 días (R30d).

Método. Estudio observacional de cohorte prospectivo y multicéntrico que incluyó a todos los pacientes 18 años que consultaron por síntomas relacionados con una FA o el hallazgo de una FA en 5 SUH catalanes. Se recogieron variables demográficas. del episodio agudo. de manejo en urgencias y la R30d.

Resultados. De los 1.199 pacientes. 1.052 tuvieron seguimiento a 30 días. La edad media fue de 73 (DE 13) años y 646 (53.9%) eran mujeres. Seiscientos cincuenta y dos pacientes (54.4%) tenían una FA conocida. los cuales tenían mayor edad. presencia de comorbilidades y uso de antiarrítmicos y anticoagulantes orales. Hubo escasas diferencias en el manejo farmacológico en urgencias. La R30d fue de un 7.9%. y fue más frecuente cuando se usó digoxina en urgencias y bloqueadores de los canales del calcio al alta.

Conclusiones. Existen diferencias basales entre los pacientes con FA de *novo* y conocida. pero estas son escasas en el manejo en urgencias. En pacientes atendidos por fibrilación auricular en urgencias. la R30d se relacionó con el uso de digoxina en urgencias y de bloqueadores de los canales del calcio al alta.

Palabras clave: Fibrilación auricular. Servicio de urgencias hospitalario. Reconsulta.

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Introduction

Atrial fibrillation (AF) is the most frequent heart rate disorder in the general population. It is estimated that 0.95-1% of the adult population will eventually have AF[1-3]. In the outpatient setting. this prevalence rises to 6%[4] and may account for up to 3.6% of emergency department (ED) consultations. This is expected to increase progressively over the next few years[5-7]. AF is associated with cerebral vascular accident (CVA). and involves a serious public health problem. so that the percentage of CVA in patients with non-valvular AF reaches 5% per year. and is 2 to 7 times more frequent than in the population without AF[8,9].

Hospital visits in EDs for an episode of AF is a clear opportunity to improve the management of this arrhyth-

mia. based on rhythm control. heart rate (HR) and cardioembolic prophylaxis[10-12]. In the EDs. this visit may occur in patients who appear to have a first episode of AF or in patients with a pre-diagnosed AF. and there may be differences in their characteristics and management in the ED. Another aspect of interest that has an impact on the quality of life of patients with AF is AF-related revisit at 30 days. which can reach 8 and 10% at 14 and 30 days. respectively[13.14]. In our setting. revisits have not been studied in depth. but it is known that it is related to a worse quality of life and to an overload of EDs that could be avoided with a correct initial management of AF[15].

The main objectives of this study were to investigate the characteristics of patients visiting the ED for an episode of AF. depending on whether AF is de novo or previously diagnosed. and to quantify emergency re-visits related to AF at 30 days and its associated factors.

Method

The URGFAICS register (Emergency and Atrial Fibrillation at the Institut Català de la Salut) is an observational multipurpose and multicentric cohort study with a prospective follow-up of 30 days. The EDs of five of the eight hospitals of the Institut Català de la Salut participated in the registry: Hospital Universitari Joan XXIII de Tarragona. Hospital Universitari Arnau de Vilanova de Lleida. Hospital Universitari de Bellvitge de l'Hospitalet de Llobregat. Hospital Universitari Germans Trias i Pujol de Badalona and Hospital de Viladecans. The inclusion was consecutive and lasted 6 months. from September 2016 to February 2017. Patients ≥ 18 whose reason for ED visit was the finding of AF or the presence of symptoms related to AF were selected according to the modified EHRA scale[10] and the CCS-SAF scale[16]. For the diagnosis of AF. the criteria established in the latest guidelines of the European Society of Cardiology were followed. which require heart rhythm monitoring by means of an electrocardiogram (ECG) recording the typical pattern of AF with totally irregular RR intervals and indistinguishable or undefined P waves[10]. ECG was allowed to be performed out-of-hospital. provided that the presence of AF was the reason for referral to the ED. within 12 hours. The exclusion criteria were the presence of another rhythm other than AF or the lack of consent to participate in the study. In order to ensure the consecutive inclusion of patients. the research team at each centre was made up of emergency physicians who covered the entire care schedule. and were responsible for the initial recruitment of patients. Subsequently. the lead investigator of each centre. after reviewing the clinical histories and all complementary tests performed during ED admission and hospitalization. decided on the patient's final inclusion in the study. Repeated episodes were eliminated. including only the first episode of each patient during the 6 months of the study. During the study. the usual clinical practice established in the protocols of each centre was carried out. and there was no intervention. The study was approved by the Clinical Research Ethics Committee of Bellvitge University Hospital (reference number PR354/16).

The independent variables collected were the following: demographic variables (age and sex). comorbidities. basic treatment (antiarrhythmic drugs. antiaggregants and oral anticoagulants). data on the acute episode (clinical manifestations. ECG in the emergency department. vital signs). duration of the current episode from the onset of symptoms to ED consultation (≤ 48 hours. > 48 hours) the absence of symptoms that help to delimit the duration of the episode. attitude towards AF according to current recommendations (HR control for patients with a fast ventricular response above 110 beats per minute was defined as unknown chronology. rhythm control for patients with a duration of AF ≤ 48 hours or with correct anticoagulation during the previous three weeks. or transesophageal echocardiography that ruled out the presence of thrombus in the left atrium in patients with a duration of AF greater than 48 hours or of unknown chronology)[10]. pharmacological management in the emergency department. electrical or pharmacological cardioversion. assessment of thrombotic and haemorrhagic risk included in the emergency report. treatment at discharge and final destination. These variables were collected prospectively by the researchers in a form designed for the present study. The sources of information were the patient or caregiver and the clinical history. The research team calculated the thrombotic risk using the CHA_2DS_2-VASc scale with the data collected in the personal history. which was defined as CHA_2DS_2-VASc researcher. to differentiate it from CHA_2DS_2-VASc medical care. which was reflected in the medical history.

The dependent outcome variable was re-visit to an ED related to the 30 days of the index episode (R30d). The reason for reconsultation had to be related to the AF of the index episode. The investigator at each center was responsible for follow-up at 30 days by referring to the hospital and primary care clinical history or calling the patient. For the analysis of R30d. only patients discharged directly from the ED were included.

Qualitative variables were expressed as frequencies and percentages and quantitative variables as mean and standard deviation (SD). A comparative study was performed based on whether AF was de novo or previously diagnosed. Comparisons were made with the chi-square test (or Fisher's exact test. when necessary) for the first ones and with the Student's t test for independent samples (or with the non-parametric Mann-Whitney test if the principle of normality was violated. which was analyzed by Kolmogorov-Smirnov's test). for the second ones. For R30d. a univariate analysis was performed and variables with a value of $p < 0.20$ were introduced into a logistic regression model using the introductory method. Odds ratios (OR) with their 95% confidence interval (95% CI) were calculated. It was accepted that there were statistically significant differences if the p value was less than 0.05. or if the OR value excluded value 1. Statistical analysis was performed with the statistical package SPSS 24.0 (IBM. North Castle. New York. USA).

Results

The URGFAICS cohort included 1.199 patients. of which 1.052 patients participated in the R30d analysis (Figure 1). Table 1 shows the characteristics of the patients included in the study. Patients had an average age of 73 years (SD 13.2). with a predominance of women. and a high number of associated comorbidities and antiarrhythmic drugs. mainly beta-blockers. Chronic anticoagulant treatment was used by 38.4%. with antivitamin K drugs predominating (73.7%). A total of 54.4% of the patients had pre-diagnosed AF. They were older and had comorbidities. Except for the use of calcium channel blocking drugs. which was the same in both groups. chronic use of antiarrhythmics and oral anticoagulants was also higher in this group. Regarding the characteristics of the episode and management in the emergency department. patients with known AF showed a greater presence of palpitations. duration of AF ≤ 48 hours. attitude of control of HR and rhythm. and use of antiarrhythmic drugs of group Ic. Thrombotic and hemorrhagic risk assessment was reported more frequently in the clinical history of patients with de novo AF. and an elevated thrombotic risk ($CHACHA_2DSCHA_2$-VASc ≥ 2 points) was observed more frequently in the known AF group. In almost two thirds of patients with de novo AF who did not receive prior anticoagulation. anticoagulant treatment was initiated from the emergency department. and this percentage was lower in patients with known AF. Anticoagulant treatment was initiated mainly with antivitamin K drugs.

As for R30d. it was 7.9%. and the most frequent reason was the presence of palpitations. followed by chest pain and dyspnea. The independent variables related to higher R30d were the use of digoxin in the emergency department and drugs blocking calcium channels at discharge (Figure 2).

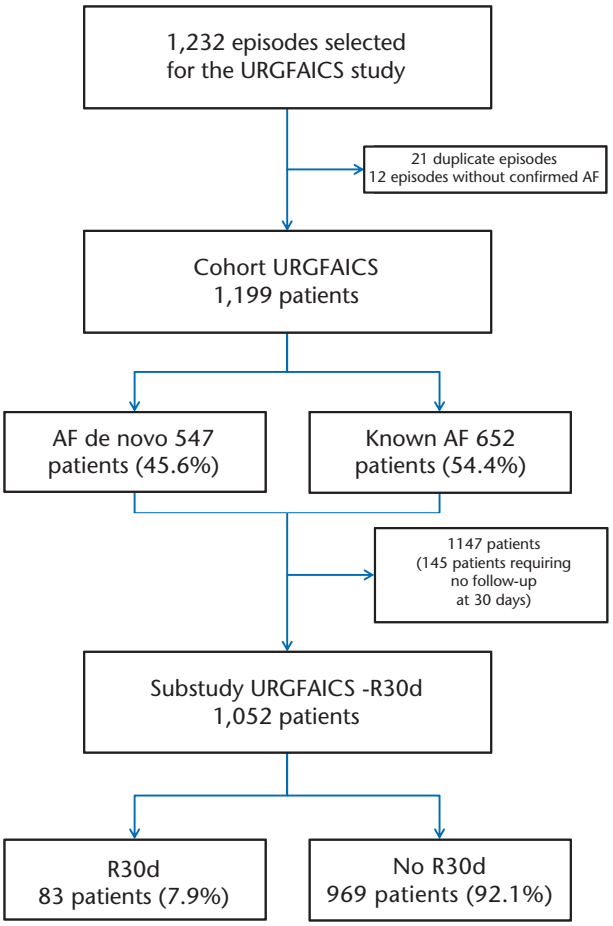

Figure 1. Flowchart of patient inclusion and outcome variable of the URGFAICS cohort.
AF: atrial fibrillation; R30d: reconsults in an ED related to AF 30 days after the index episode.

Discussion

The URGFAICS register highlights the main baseline characteristics of patients suffering from an episode of AF that motivates an ED visit. These results coincide with the records published in Spain and other countries[5,6,11-15]. Approximately half of the patients with AF visiting the ED already had a history of AF. This fact is related to different baseline characteristics when compared with de novo AF. Despite these baseline differences. pharmacological management in the ED only differs in the use of antiarrhythmics of group Ic. which was twice as high in patients with known AF. We would like to point out that the current recommendations promote that whenever possible rhythm control is attempted. the most effective form being electrical cardioversion[10,17]. In our study. rhythm control in the global population was performed at 31.1%. similar to another Canadian record[18]. Pharmacological cardioversion. although less effective. was the most used to control rhythm and amiodarone was the drug with the capacity to reverse the most used rhythm. Although amiodarone is slow and of low efficacy. it has an excellent safety profile in patients with and without structural heart disease. which could justify its being a widely used drug[10]. Ic antiarrhythmics were used more in the known AF group. probably justified because some patients in this group were already using these base drugs. Probably in the future the scenario of cardioversion will change with the progressive introduction of vernakalant. which has demonstrated its efficacy and safety in EDs. and with the most appropriate use of electrical cardioversion[19,20]. The lesser use of electrical cardioversion. despite its greater efficacy. can be explained by the need for sedation prior to the procedure. despite the fact that this sedation can be performed safely in the ED and has few associated adverse effects[17].

Thrombotic and haemorrhagic risk assessment is recommended to indicate initiation of anticoagulant therapy in patients with AF. In this sense. we would like to highlight the scarce reflection. in the emergency clinical reports of our study. of the assessment of

Table 1. Characteristics of the global sample and univariate study depending on whether the atrial fibrillation is de novo or previously diagnosed

	Total N = 1.199 n (%)	Lost values n (%)	AF de novo N = 547 n (%)	Pre-diagnosed AF N = 652 n (%)	p value
Demographic data					
Age (years) [mean (SD)]	73.1 (13.2)	0 (0.0)	72.2 (14.1)	73.9 (12.3)	0.029
Age ≥ 75 years	618 (51.5)	0 (0.0)	265 (48.4)	353 (54.1)	0.049
Female sex	646 (53.9)	0 (0.0)	278 (50.8)	368 (56.4)	0.052
Comorbidities					
High blood pressure	858 (71.6)	0 (0.0)	370 (67.6)	488 (74.8)	0.006
Diabetes mellitus	298 (24.9)	0 (0.0)	141 (25.8)	157 (24.1)	0.498
Known Valve Disease	271 (22.6)	0 (0.0)	111 (20.3)	160 (24.5)	0.080
Previous heart failure	246 (20.6)	0 (0.0)	68 (12.4)	178 (27.3)	< 0.001
Ischemic Heart Disease	180 (15.1)	3 (0.3)	70 (12.8)	110 (16.9)	0.045
Chronic renal failure	212 (17.7)	1 (0.1)	80 (14.6)	132 (20.2)	0.011
Chronic obstructive pulmonary disease	149 (12.4)	0 (0.0)	51 (9.3)	98 (15.0)	0.003
Cerebral vascular accident	117 (9.8)	0 (0.0)	37 (6.8)	80 (12.3)	0.001
Peripheral artery disease	86 (7.2)	0 (0.0)	35 (6.4)	51 (7.8)	0.341
Previous systemic embolism	31 (2.6)	0 (0.0)	7 (1.3)	24 (3.7)	0.009
Basic treatment					
Beta-blockers	501 (41.8)	0 (0.0)	135 (24.7)	366 (56.1)	< 0.001
Calcium channel blockers	216 (18.0)	1 (0.1)	91 (16.7)	125 (19.2)	0.261
Amiodarone	81 (6.8)	0 (0.0)	2 (0.4)	79 (12.1)	< 0.001
Digoxin	79 (6.6)	2 (0.2)	6 (1.1)	73 (11.2)	< 0.001
Class Ic antiarrhythmics	99 (8.3)	0 (0.0)	0 (0.0)	99 (15.2)	< 0.001
Dronedarone	9 (0.8)	1 (0.1)	0 (0.0)	9 (1.4)	0.005
Oral anticoagulants	460 (38.4)	0 (0.0)	40 (7.3)	420 (64.4)	< 0.001
Antivitamin K	339 (73.7)	0 (0.0)	33 (82.5)	306 (72.9)	
Direct anticoagulants	121 (26.3)	0 (0.0)	7 (17.5)	114 (27.1)	
Anti-aggregates	311 (26.1)	7 (0.6)	164 (30.3)	147 (22.6)	0.003
Acetylsalicylic acid	283 (23.7)	5 (0.4)	149 (27.4)	134 (20.6)	
Inhibitor P2Y12	43 (3.6)	5 (0.4)	26 (4.8)	17 (2.6)	
Clinical manifestations of the acute episode					
Palpitations	546 (45.5)	0 (0.0)	229 (41.9)	317 (48.6)	0.019
Dyspnea	195 (16.3)	0 (0.0)	86 (15.7)	109 (16.7)	0.642
Chest pain	144 (12.0)	0 (0.0)	68 (12.4)	76 (11.7)	0.681
Dizziness or similar symptoms[1]	137 (11.4)	0 (0.0)	69 (12.6)	68 (10.4)	0.236
Casual finding	124 (10.3)	0 (0.0)	76 (13.9)	48 (7.4)	< 0.001
Other symptoms[2]	116 (9.7)	0 (0.0)	52 89.5)	64 (9.8)	0.857
Stroke	12 (1.0)	0 (0.0)	7 (1.3)	5 (0.8)	0.374
Outpatient referral	347 (28.9)	0 (0.0)	218 (39.9)	129 (19.8)	< 0.001
Electrocardiogram in the emergency department					
Atrial fibrillation	952 (79.4)	0 (0.0)	437 (79.9)	515 (79.0)	0.700
Atrial Flutter	148 (12.3)	0 (0.0)	68 (12.4)	80 (12.3)	0.933
Sinus rhythm	81 (6.8)	0 (0.0)	33 (6.0)	48 (7.4)	0.361
Other rhythms	18 (1.5)	0 (0.0)	9 (1.6)	9 (1.4)	0.707
Vital signs					
SBP/DBP (mmHg) [mean (SD)	130 (23) / 79 (15)	36 (3.0)	132 (24) / 80 (15)	129 (23) / 78 (15)	0.020 / 0.106
HR (bpm) [mean (SD)]	114 (32)	5 (0.4)	116 (31)	113 (33)	0.104
O_2 saturation (%) [mean (SD)	97 (2)	70 (5.8)	97 (2)	97 (2)	0.410
HR > 110 bpm	696 (58.3)	5 (0.4)	311 (57.0)	385 (59.4)	0.392
SBP < 90 mmHg	40 (3.4)	36 (3.0)	18 (3.4)	22 (3.5)	0.923
Attitude in the emergency department					
AF duration ≤ 48 hours	288 (24.0)	0 (0.0)	102 (18.6)	186 (28.5)	< 0.001
HR and rhythm control	167 (14.1)	13 (1.1)	55 (10.2)	112 (17.3)	< 0.001
Only HR control	506 (42.7)	13 (1.1)	235 (43.5)	271 (42.0)	0.587
Only rhythm control	202 (17.0)	13 (1.1)	83 (15.4)	119 (18.4)	0.164
No control required	311 (26.2)	13 (1.1)	167 (30.9)	144 (22.3)	0.001
Pharmacological management					
Digoxin	349 (29.2)	4 (0.4)	151 (27.8)	198 (30.4)	0.314
Amiodarone	225 (18.8)	2 (0.2)	96 (17.6)	129 (19.8)	0.338
Beta-blocker[3]	155 (12.9)	1 (0.1)	78 (14.3)	77 (11.8)	0.203
Class Ic antiarrhythmics	87 (7.3)	1 (0.1)	26 (4.8)	61 (9.4)	0.002
Calcium channel blockers	37 (3.1)	1 (0.1)	13 (2.4)	24 (3.7)	0.195
Vernakalant	3 (0.3)	1 (0.1)	0 (0.0)	3 (0.3)	0.255

Table 1. Characteristics of the global sample and univariate study depending on whether the atrial fibrillation is de novo or previously diagnosed *(Continuation)*

	Total N = 1.199 n (%)	Lost values n (%)	AF de novo N = 547 n (%)	Pre-diagnosed AF N = 652 n (%)	p value
Type of cardioversion[4]					
Pharmacological cardioversion	262 (71.0)	0 (0.0)	103 (74.6)	159 (68.8)	0.234
Effective (n = 262)	141 (53.8)	0 (0.0)	60 (58.3)	81 (50.9)	0.246
Electrical cardioversion	107 (29.0)	0 (0.0)	32 (23.2)	75 (32.5)	0.057
Effective (n = 107)	100 (93.5)	0 (0.0)	31 (96.9)	69 (92.0)	0.350
Risk assessment					
Thrombotic risk (clinical report)	459 (38.3)	0 (0.0)	297 (54.3)	162 (24.8)	< 0.001
Valuation with $CHADS_2$	170 (14.2)	-	99 (18.1)	71 (10.9)	
Valuation with CHA_2DS_2-VASc	427 (35.6)	-	273 (49.9)	154 (23.6)	
CHA_2DS_2-VASc attending physician 2 points (n = 427)	335 (78.5)	0 (0.0)	222 (81.3)	113 (73.4)	0.055
CHA_2DS_2-VASc investigator 2 points (n = 1.198)	992 (82.8)	0 (0.0)	430 (78.6)	562 (86.3)	< 0.001
Hemorrhagic risk (clinical report)	215 (17.9)	0 (0.0)	131 (23.9)	84 (12.9)	< 0.001
Treatment at discharge					
Start of anticoagulation[5]	408 (55.2)	0 (0.0)	322 (63.5)	86 (37.1)	< 0.001
Antivitamin K	262 (35.5)	0 (0.0)	216 (42.6)	46 (19.8)	
Direct anticoagulants	134 (18.1)	0 (0.0)	96 (18.9)	38 (16.4)	
Low molecular weight heparin	12 (1.6)	0 (0.0)	10 (2.0)	2 (0.9)	
Digoxin	105 (8.8)	9 (0.8)	41 (7.6)	64 (9.9)	0.156
Amiodarone	135 (11.3)	8 (0.7)	74 (13.6)	61 (9.4)	0.025
Beta-blockers	360 (30.2)	6 (0.5)	223 (40.9)	137 (21.1)	< 0.001
Antiarrhythmics class Ic	55 (4.6)	6 (0.5)	18 (3.3)	37 (5.7)	0.048
Calcium channel blocker	42 (3.5)	9 (0.8)	19 (3.5)	23 (3.6)	0.950
Evolutionary data					
Destination home	1,054 (87.9)	0 (0.0)	481 (87.9)	573 (87.9)	0.979
Reconsult 30 days	83 (7.9)	2 (0.2)	39 (8.1)	44 (7.7)	0.795
Reason reconstructs after 30 days[6]					
Palpitations	47 (56.6)		23 (59.0)	24 (54.5)	0.684
Chest pain	25 (30.1)		9 (23.1)	16 (36.4)	0.188
Dyspnea	14 (16.9)		7 (17.9)	7 (15.9)	0.804
Other symptoms[2]	5 (6.0)		4 (10.3)	1 (2.3)	0.182
Dizziness or similar clinical symptoms[1]	4 (4.8)		3 (7.7)	1 (2.3)	0.337
Treatment related	3 (3.6)		1 (2.6)	2 (4.5)	0.999

AF: atrial fibrillation; SD: standard deviation; SBP: systolic blood pressure; DBP: diastolic blood pressure; HR: heart rate; bpm: beats per minute. 1Dizziness or similar clinical: dizziness. fainting. decreased consciousness. sensation of instability. 2Other symptoms: nonspecific symptoms attributed to AF such as general malaise. abdominal pain. nausea. 3Intravenous beta-blocker: propanolol or esmolol. 4Calculation performed only for patients candidates for rhythm control (n = 369). 5Calculation performed only for patients who did not receive previous anticoagulant treatment. (n = 739). 6Analysis carried out on patients who presented reconsultation at 30 days. The sum is greater than 100% because the same patient could have more than one symptom as a reason for reconsultation (n = 83).

this risk. This does not mean that physicians did not perform this assessment. but it would be recommended that it be reflected in the discharge reports. especially considering the high thrombotic risk in our series (more than 80% had a $CHACHA_2DSCHA_2$2-VASc calculated by the researcher ≥ 2 points). An interesting fact was that more than half of the patients without previous anticoagulant treatment initiated this in the emergency department. As is to be expected. it was initiated more frequently in patients with de novo AF. Antivitamin K drugs were mainly used. although the use of direct-acting anticoagulants is beginning to be documented. We can say that there is a change in the behavior of initiating anticoagulant treatment from the emergency department. surpassing the figures of other previous records. which are around 40% or even lower[21,22]. These data show that it seems that barriers related to the patient. the doctor and the medical care system for prescribing anticoagulants are beginning to be broken down[23].

An important aspect of AF. which has an impact on the quality of life perceived by the patient and on the quality of care provided in the ED. is R30d. The presence of symptoms that cause an alteration or interruption of daily life is related to a worse perceived quality of life[24]. In our study. R30d reached 7.9% and is a figure similar to the 8% described in the RED-AF validation that also assessed R30d for symptoms related to the previous episode of AF. Also coinciding with this record are the reasons for R30d. which were almost exclusively the reappearance of symptoms. especially palpitations. chest pain and dyspnea[25,26]. We found two independent variables related to a higher R30d: the use of digoxin in the emergency department and the use of calcium channel blocking drugs to discharge from the emergency department. Although we may think of a higher R30d due to the appearance of adverse effects related to these drugs. as we have already mentioned. the reasons for R30d are almost exclusively related to the reappearance of

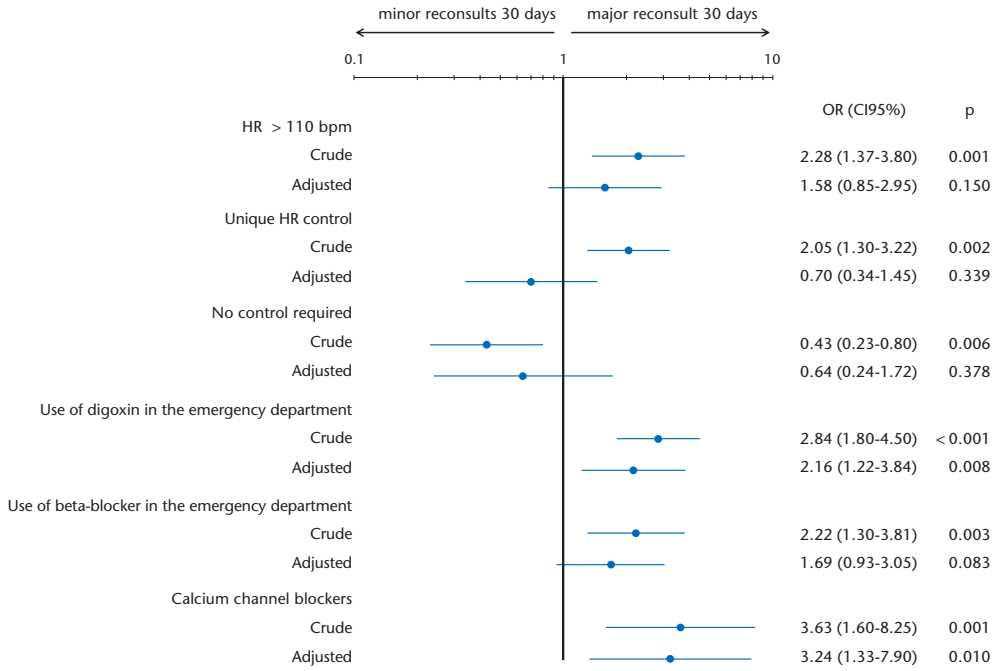

Figure 2. Crude and adjusted Odds Ratio (OR) of the variables associated with reconsultation at 30 days for the new episode of atrial fibrillation (AF).
HR: heart rate; 95% CI: 95% confidence index.
Crude OR adjustment was performed for the following variables: sex. history of arterial hypertension. treatment with calcium channel blockers. oral anticoagulants or base antiaggregants; presence of palpitations. presence of electrocardiogram in sinus rhythm. heart rate > 110 beats per minute. single control of HR or do not require control. use of digoxin or beta-blocker in the emergency department. pharmacological cardioversion manoeuvre. use of amiodarone or calcium channel blockers at discharge.

symptoms due to AF. therefore we do not think of this causal relationship. Although the use of digoxin has been described as being associated with different adverse effects. these results have been found in observational studies with more complex populations. Due to the results obtained in different meta-analyses. this assertion is not true when the analyzed data come from clinical trials. where the populations have been randomized and therefore have a similar complexity[27]. Currently. the use of beta-blockers and diltiazem or verapamil instead of digoxin is recommended for the acute control of HR. due to its efficacy in patients with high sympathetic activity and its speed of action. In the long-term pharmacological control of HR. beta-blockers are also recommended as drugs of first choice[10]. Digoxin is of choice when there is heart failure with AF as a precipitating factor. a situation that occurs frequently[10.28]. In our data. digoxin was the most used drug. and its use differed greatly from the number of patients who received digoxin at discharge. which was lower. This suggests that in the emergency department digoxin is used for HR control. but it is not prescribed at discharge and therefore HR control has to be maintained with the prescription of other drugs such as beta-blockers or calcium channel blockers. While the use of the latter to high was low. their prescription did relate to a higher R30d. This contrasts with the results of a clinical trial comparing diltiazem. verapamil. metoprolol and carvedilol. in which diltiazem was the best outcome for the control of HR and AF-related symptoms. It should be noted that the dose used in that study was the maximum dose recommended in the guidelines (360 mg per day)[29]. We did not record the dose of diltiazem at discharge. but we believe that the dose is probably lower. so its slowing effect is reduced. It may also be the case that we are faced with a correct dose but a lack of response on the part of the patient. Adapting the use of digoxin in the emergency department and correctly dosing drugs at discharge. especially calcium channel blockers. can improve R30d. together with other actions already described as an educational intervention prior to discharge[30].

This study has certain limitations. Management of AF may differ among participating centers. although all follow the same current guidelines and recommendations. not all have the same resources. The results come from five Spanish EDs and cannot be extrapolated to other countries or different settings. The lack of collection of the dose of braking drugs from HR to discharge from the emergency department and of the patient's HR at the time of reconsultation are aspects

that limit the interpretation of R30d. In spite of these limitations. we believe that our study is a faithful reflection of the management and attitude followed in EDs when faced with an episode of AF and can be a tool to improve AF care.

In conclusion. we found differences in the baseline characteristics of patients with de novo AF compared to known or prediagnosed AF. but these differences have been small in terms of management in the ED. Pharmacological cardioversion predominates. although electrical cardioversion is more effective. and anticoagulant management at discharge may be considered adequate. although there is room for improvement. R30d is not elevated and is related to clinical recurrence. and its relationship with the use of digoxin in the emergency department and with treatment with calcium channel blockers. probably due to an inadequate dose to discharge or a lack of response to these drugs.

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Addendum

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