Frequency, Patient Characteristics, Treatment Strategies, and Resource Usage of Atrial Fibrillation (from the Italian Survey of Atrial Fibrillation Management [ISAF] Study)

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Atrial fibrillation (AF) is 1 of the most important healthcare issues and an important cause of healthcare expenditure. AF care requires specific arrhythmologic skills and complex treatment. Therefore, it is crucial to know its real affect on healthcare systems to allocate resources and detect areas for improving the standards of care. The present nationwide, retrospective, observational study involved 233 general practitioners. Each general practitioner completed an electronic questionnaire to provide information on the clinical profile, treatment strategies, and resources consumed to care for their patients with AF. Of the 295,906 patients screened, representative of the Italian population, 6,036 (2.04%) had AF: 20.2% paroxysmal, 24.3% persistent, and 55.5% permanent AF. AF occurred in 0.16% of patients aged 16 to 50 years, 9.0% of those aged 76 to 85 years, and 10.7% of those aged ≥85 years. AF was symptomatic despite therapy in 74.6% of patients and was associated with heart disease in 75%. Among the patients with AF, 24.8% had heart failure, 26.8% renal failure, 18% stroke/transient ischemic attack, and 29.3% had ≥3 co-morbidities. The rate control treatment strategy was pursued in 55%. Of the 6,036 patients with AF, 46% received anticoagulants. The success rate of catheter ablation of the AF substrate was 50%. In conclusion, in our study, the frequency of AF was 2 times greater than previously reported (approximately 0.90%), rate control was the most pursued treatment strategy, anticoagulants were still underused, and the success rate of AF ablation was lower than reported by referral centers. **(Am J Cardiol 2013;111:705−711)**

Atrial fibrillation (AF) is 1 of the most important public health issues, occurring in approximately 1% of the general population, and 1 of the most important causes of healthcare expenditure in western countries.[1−3] In the past, several randomized controlled studies were performed to assess the most appropriate treatment of AF.[4−6] The results of these studies have provided the framework for guidelines on AF management, which are based primarily on the firm recommendation of thromboprophylaxis in patients with a high risk of stroke and on 2 well-defined treatment strategies (rhythm control and rate control).[3] Recently, several observational studies have assessed the overall adherence of in-hospital cardiologists and internists and out-hospital cardiologists to the guideline recommendations.[7−10] However, only a few studies have been performed to obtain comparable information in the much more complex setting of the community in which many patients have only occasional or no contact at all with hospitals or specialists, and, thus, it is more difficult to accurately apply the guideline recommendations.[11,12] Therefore, the Italian Association of Hospital Cardiologists and the Italian College of General Practitioners promoted a nationwide, retrospective, observational study to assess, in a large sample of the Italian population, the frequency of diagnosed AF and the current care of AF, and to detect potential areas of improvement in the standards of AF care.

Methods

In Italy, every resident is registered with a general practitioner (GP) who cares for their patients and keeps track of their clinical history. In the past few years, the Italian College of General Practitioners has developed a research network consisting of 800 GPs interested in research in primary care and trained for high-quality data entry; all use the same office software (Millewin, Millenium srl, Florence, Italy). The 600 best GPs (measured by the quality of the data records) were invited to participate in the present survey, and 233 GPs confirmed their participation in the study. From May 17 to June 22, 2011, all subjects aged ≥15 years cared for by the 233 GPs were screened, and those with AF diagnosed (supported by electrocardiographic findings or the diagnosis recorded on a hospital discharge summary)

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were included in the present study. For each patient with AF, the GPs were required to complete an electronic questionnaire to provide the following data: the demographic and clinical characteristics of the patients with AF and the number of some of the selected diagnostic and therapeutic procedures performed in the previous 5 years, the treatment strategies pursued and the current medical therapy, and the catheter ablation results. Most data were automatically extracted by the GPs from their own databases. The remaining data, which could not be extracted automatically by the computerized procedure, were collected manually. The automatic extraction included: AF (with a codified diagnosis of *International Classification of Diseases, 9th revision,* code IX 427.31), relevant cardiovascular and noncardiovascular diseases, patient baseline characteristics, therapy, test prescription (echocardiography, Holter electrocardiographic monitoring, exercise testing), and hospitalizations. The $CHADS_2$ score[3] (congestive heart failure, hypertension [blood pressure consistently >140/90 mm Hg or treated medically], age ≥75 years, diabetes mellitus, and previous stroke, transient ischemic attack, or thromboembolism; the presence of each gives a score of 1, but the last, which has a score of 2) was automatically calculated. The manual data collection included AF classification, AF-related symptoms, management strategy (rhythm vs rate control, medications), level of engagement of the GP in the diagnosis and management of AF, number of attempts and methods used to restore sinus rhythm, use of electrophysiologic testing, and use of AF substrate catheter ablation. Paroxysmal AF was defined as an episode, usually self-terminating within 48 hours, in particular within 7 days, but always terminating spontaneously. Persistent AF was defined as an episode either lasting >7 days or requiring termination by cardioversion. Permanent AF was considered present when interventions to restore sinus rhythm were no longer considered appropriate (regardless of the reason). AF was classified as "lone AF" when occurring in the absence of heart disease, hypertension, heart failure, chronic obstructive pulmonary disease, diabetes, renal failure, dementia, cerebrovascular disease, obesity, smoking, abuse of alcohol consumption, hyperthyroidism, and hypothyroidism.[3] Patients were assigned to the rhythm control strategy when a willingness to maintain sinus rhythm (previous electrical or pharmacologic cardioversion, chronic use of antiarrhythmic drugs, catheter ablation of the substrate) was present and to a rate control strategy when no attempt to maintain sinus rhythm or no use of drugs or intervention specifically directed to maintain sinus rhythm was pursued.[3] AF ablation was considered effective in the absence of AF recurrence, as determined by referred symptoms or electrocardiographic recordings, and an optimum quality of life was present. It was considered moderately effective in the presence of both >50% reduction in AF recurrence and significant improvement in quality of life. It was considered ineffective in the absence of a significant reduction of AF recurrence, with no improvement in the patient's quality of life.

Data were collected as aggregate and analyzed using standard descriptive statistics. To assess the presence of possible differences with regard to the distribution by age and gender of the Italian Survey of Atrial Fibrillation Management (ISAF) population and the Italian population (Italian Institute of Statistics Life Tables),[13] the Kolmogorov-Smirnov test was used. To assess the prevalence of AF in Italy, the crude frequencies of AF observed in the subgroups of the ISAF population were adjusted to similar subgroups of the Italian population (Italian Institute of Statistics Demographic Tables) using the direct standardization rates method.[14]

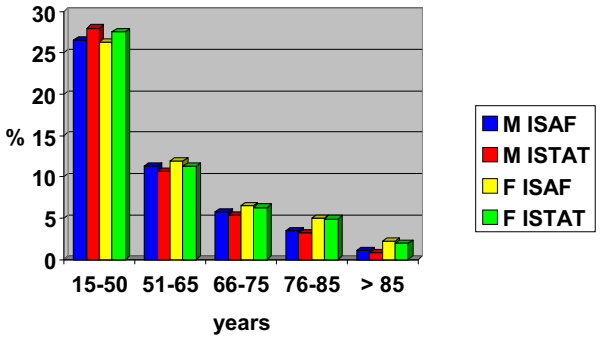

Figure 1. Distribution of Italian and ISAF study populations by gender and age. Kolmogorov-Smirnov test did not show any significant difference in distribution of ISAF and ISTAT populations by gender and age. F = female; ISTAT = Italian Institute of Statistics; M = male.

Results

We studied a population of 295,906 subjects aged ≥15 years (51.9% female) cared for by 233 GPs. The GPs and ISAF population were homogeneously distributed across Italy, with 31% and 32% in the northern regions, 24% and 23% in the central regions, 28% and 29% in the southern regions, and 17% and 16% in the islands, respectively. The Kolmogorov-Smirnov test results showed that the ISAF and Italian populations were similar with regard to gender and age distribution (Figure 1). The distribution of the entire ISAF population and of the patient subgroups according to age and gender is listed in Table 1. The diagnosis of AF was recorded and confirmed in 6,036 patients (51% female). The frequency of AF was 2.04% (95% confidence interval 1.99 to 2.09) in the global ISAF population: 2.4% in Northern Italy, 2.1% in Central Italy, 1.7% in Southern Italy and 1.8% in the Islands. The frequency of AF increased with age, with patient subgroups aged 66 to 75 years and 76 to 85 years contributing most (26.8% and 37.5%, respectively). The AF frequency ratio between males and females was ≥1.2 in each age subgroup. When the frequency of AF observed in the subgroups of the ISAF population was extrapolated to the Italian population of the same age and gender, it appeared that in Italy, the prevalence of AF is 1.85%.

At the time of the survey, 19.4% of patients had had only 1 episode of AF in the previous 5 years; 20.2% had paroxysmal, 24.3% persistent, and 55.5% permanent AF. Lone AF was diagnosed in 1.2% of patients. The clinical characteristics of the patients with AF are listed in Table 2. Approximately 2/3 of our patients had cardiac disease, almost all (91.5%) had ≥1 co-morbidity, 1/3 had ≥3 co-morbidities, and ¼ had heart failure. The AF history was >5 years in ½ of the patients (48.2%). Among those with >1 episode of AF (commonly treated with medical

Table 1
Frequency of atrial fibrillation (AF) by age and gender

Age (yrs)	Study Population (n = 295,906)		AF Population (n = 6,036)		AF Frequency		
	Male	Female	Male	Female	Total	Male	Female
15–50	78,415 (26.5%)	77,823 (26.3%)	183 (3%)	65 (1.1%)	0.16%	0.23%	0.08%
51–65	33,437 (11.3%)	35,213 (11.9%)	527 (8.7%)	340 (5.6%)	1.3%	1.6%	0.97%
66–75	16,867 (5.7%)	19,235 (6.5%)	821 (13.6%)	795 (13.2%)	4.5%	4.9%	4.1%
76–85	10,357 (3.5%)	14,794 (5%)	1,028 (17%)	1,237 (20.5%)	9.0%	9.9%	8.4%
≥86	3,255 (1.1%)	6,510 (2.2%)	397 (12.2%)	643 (9.9%)	10.7%	12.2%	9.9%

therapy), 25.4% did not report any symptoms related to the arrhythmia.

The clinical characteristics, antiarrhythmic therapy, and antithrombotic therapy of the patients with AF, according to the treatment strategy assignment, are summarized in Table 3. The rhythm control strategy was pursued in 43.8% of the patients and the rate control strategy in 54.8%; in the remaining 1.4%, the strategy was not defined. Among the rhythm control patients, 43.1% were aged ≥75 years, most had cardiac disease, 45.5% had paroxysmal AF, 54.5% had persistent AF, and 54.5% had received ≥1 electrical or pharmacologic cardioversions (11% >3 attempts). In the 5 years preceding the present study, 54.5% of the patients had experienced ≥1 AF recurrences. β Blockers were the drugs prescribed most, followed by class 1C antiarrhythmic drugs (21.5%) and amiodarone. Ablation of the AF substrate or pacemaker/defibrillator implantation was performed in few patients. In addition, in the rhythm control group, 50.8% had a $CHADS_2$ score of ≥2, 26.6% did not receive any antithrombotic therapy, and 28.4% were treated with oral anticoagulation (OAC) therapy. In particular, only <1/2 (45.4%) of the 1,308 patients with a $CHADS_2$ score of ≥2 received OAC therapy and only <1/2 (44.4%) of the 714 patients who did not receive warfarin presented with valid reasons not to be treated (side effects, refusal, no compliance, risk of bleeding). Of the rate control patients, 64.3% were ≥75 years old, the proportion of patients with cardiac disease was similar to that in the rate control group. β Blockers were prescribed most, followed by digitalis, verapamil-diltiazem, and combinations of drugs. Atrioventricular junction ablation and pacemaker implantation (ablate and pace) were performed in a few patients. A $CHADS_2$ score of ≥2 was present in 71.8% of patients, and OAC was prescribed in 59.6%. In particular, of the 2,378 patients with a $CHADS_2$ score of ≥2, approximately $^3/_4$ (73.2%) received OAC therapy. Of the 664 patients who did not receive OAC, 69.1% presented with valid reasons not to be treated.

Of the whole study population, the $CHADS_2$ score was 0 in 12.1%, 1 in 25.3%, and ≥2 in 62.6%; 46% of the patients received OAC, 37.5% ≥1 antiplatelet agent, and 16.5% received no antithrombotic therapy.

In the 5 years preceding the ISAF study, catheter ablation of the AF substrate was performed in 174 patients (2.9% of all patients with AF). Of these patients, 69% were 51 to 75 years old, 55.7% had heart disease, and most had persistent AF (80.5%). Palpitation was the most frequent indication for ablation, followed by asthenia and dyspnea. In 26.4% of the patients, the ablation was repeated ≥2 times. After ablation, 67.8% of patients continued to take antiarrhythmic drugs; 55.2% were treated with OAC (Table 4). The GPs considered the results of the ablation procedure effective in 50.6% of cases, moderately effective in 30.4%, and ineffective in 19%.

When considering the complex process of AF care, GPs alone treated the patients with AF in 40.1% of cases and required the help of cardiologists in 54.6%. OAC was managed exclusively by the GPs in 11.5% of cases and by specialists or in cooperation (GPs and specialists) in the remaining (Table 5).

During the 5 years preceding the survey, 38.7% of the rate control patients and 46.5% of the rhythm control patients were hospitalized for reasons related to AF. An echocardiogram was performed 1 to 3 times in 58.8% of cases, a 24-hour Holter electrocardiogram was performed 1 to 3 times in 42%, and an exercise test was performed 1 to 3 times in 22.2% (Table 5).

Discussion

The population screened in the ISAF study is representative of the Italian population; therefore, the data collected in our investigation can be considered representative of the real world of AF in Italy. These data provide some new interesting epidemiologic information and an updated view of AF care in the community. Apart from the confirmation of the relation between AF frequency and aging and the greater frequency of AF in men, our data have shown that in Italy the prevalence of AF is 1.85%, approximately 2 times greater than that reported in previous comparable studies (0.9% in Northern California residents aged ≥20 years, 0.94% in the whole Scottish population).[1,11] Two reasons are possible for such a difference. First, the different clinical characteristics of the study populations might have influenced the likelihood of developing AF (24% of the patients in the ISAF study vs 15% in the Scottish survey were aged ≥65 years). Second, awareness of AF has increased over time among GPs and might have resulted in an improved ability to suspect and diagnose AF.[11,15] The second interesting epidemiologic finding that emerged from our study was the poor clinical profile of our patients with AF that was very similar to that observed in patients with AF in Germany in 2009 but significantly worse than that reported in Scotland in 2001.[11,12] This supports the common perception that in the community, the AF population continues to increase, along with the progressive increase of the burden of chronic disease. Additional elements of clinical interest that

Table 2
Clinical characteristics

Characteristic	Total (n = 6,036)
Female gender	3,080 (51%)
Atrial fibrillation type	
Paroxysmal	1,218 (20.2%)
Persistent	1,465 (24.3%)
Permanent	3,353 (55.5%)
Lone atrial fibrillation	73 (1.2%)
Duration of atrial fibrillation history* (yrs)	
<1	760 (12.7%)
1−5	2,339 (39.1%)
6−10	1,811 (30.3%)
>10	1,074 (17.9%)
Current atrial fibrillation symptoms	
None	1,522 (25.4%)
Palpitations	2,457 (39.4%)
Asthenia	1,471 (24.6%)
Dyspnea	1,417 (23.7%)
Other	281 (4.7%)
No heart disease	1,433 (23.7%)
Coronary artery disease	1,145 (19%)
Hypertension and left ventricular hypertrophy	2,203 (36.5%)
Ischemic dilated cardiomyopathy	237 (3.9%)
Nonischemic dilated cardiomyopathy	122 (2%)
Valvular disease	735 (12.2%)
Other heart disease	153 (2.5%)
Hypertension	4,023 (66.7%)
Diabetes	1,343 (22.2%)
Diabetes plus vascular complications	420 (7%)
Cerebrovascular disease†	
Ischemic stroke	448 (7.5%)
Hemorrhagic stroke	70 (1.2%)
Transient ischemic attack	560 (9.3%)
Psychological disturbance	1,129 (18.9%)
Dementia	891 (14.9%)
Renal failure†	
Glomerular filtration rate 30−60 ml/min/1.73 m^2	1,350 (22.6%)
Glomerular filtration rate <30 ml/min/1.73 m^2	218 (3.6%)
Dialysis	36 (0.6%)
Hyperthyroidism	267 (4.5%)
Hypothyroidism	456 (7.6%)
Chronic obstructive pulmonary disease	1,114 (18.7%)
Obstructive sleep apnea	268 (4.5%)
Other pulmonary disease	226 (3.8%)
≥3 Co-morbidities	1,770 (29.3%)
Obesity (body mass index ≥30 kg/m^2)	1,198 (20%)
Heart failure hospitalizations (n)†	1,486 (24.8%)
None	613 (10.2%)
1−3	726 (12.1%)
>3	147 (2.5%)
No co-morbidity	512 (8.5%)
Smoke	542 (9%)
Alcohol abuse	143 (2.4%)
Implantable defibrillator	179 (3%)

* Data from 5,984 patients.
† Data from 5,996 patients.

Table 3
Clinical characteristics stratified by treatment strategy assignment

Characteristic	Rhythm Control (n = 2,643; 43.8%)	Rate Control (n = 3,310; 54.8%)
Age (yrs)		
15−50		
Male	141 (5.3)	36 (1.1)
Female	44 (1.7)	15 (0.5)
51−65		
Male	323 (12.2)	196 (5.9)
Female	204 (7.7)	134 (4.0)
66−75		
Male	406 (15.4)	408 (12.3)
Female	386 (14.6)	393 (11.9)
76−85		
Male	395 (15)	618 (18.7)
Female	469 (17.7)	758 (22.9)
>85		
Male	103 (3.9)	289 (8.7)
Female	172 (6.5)	463 (14)
Heart disease	1,906 (72.1)*	2,623 (79.2)
$CHADS_2$ score†		
0	486 (18.4)‡	226 (6.8)
1	784 (29.7)‡	706 (21.3)
2	791 (30.7)‡	1,156 (34.9)
>2	517 (20.1)‡	1,222 (36.9)
Antiarrhythmic therapy		
No	425 (16.5)‡	532 (16.1)
β Blockers	730 (28.3)‡	1,227 (37.1)
Propafenone	269 (10.4)‡	—
Flecainide	285 (11.1)‡	—
Amiodarone	447 (17.3)‡	—
Dronedarone	37 (1.4)‡	—
Digitalis	—	798 (24.1)
Verapamil/diltiazem	134 (5.2)‡	295 (8.9)
Combination of drugs	140 (5.4)‡	402 (12.1)
Pacemaker	110 (4.3)‡	56 (ablate and pace; 1.7)
Ablation of atrial fibrillation	174 (6.7)‡	0
Antithrombotic therapy		
No	686 (26.6)‡	273 (8.2)
Antiplatelet agents	1,164 (45.1)‡	1,054 (31.8)
Oral anticoagulation	728 (28.2)‡	1,974 (59.6)
Antiplatelet and oral anticoagulation	4 (0.16)‡	9 (0.27)
$CHADS_2$ ≥2 and oral anticoagulation	594/1,308 (45.4)	1,741/2,378 (73.2)

* Data from 2,614 patients.
† Congestive heart failure, hypertension (blood pressure consistently >140/90 mm Hg or treated medically), age ≥75 years, diabetes mellitus, and previous stroke, transient ischemic attack, or thromboembolism; the presence of each gives a score of 1, but the last, which has a score of 2.
‡ Data from 2,578 patients.

emerged from our study include the treatment strategy assignment and the use of antiarrhythmic and antithrombotic drugs. Rhythm control was pursued in almost 44% of the cases and rate control in 55%. The frequency of the rhythm control strategy assignment was between that reported in the German community (16%) and that reported either in the Atrial Fibrillation: Focus on Effective Clinical Treatment Strategies (AFFECTS) Registry[10] (64%) or in the study by LaPointe et al[9] (48%), in which patients were mainly treated in-hospital and by cardiologists. This is a very satisfactory result, suggesting that the Italian physicians are well aligned with the guideline recommendations regarding antiarrhythmic treatment strategy allocation.[3] However, our results are less satisfactory when considering the choice of antiarrhythmic drugs. In contrast with the guideline

Table 4
Clinical characteristics of patients who underwent catheter ablation of atrial fibrillation substrate (n = 174)

Characteristic	n (%)
Gender	
Male	112 (64.4)
Female	62 (35.6)
Age (yrs)	
16−50	
Male	15 (8.6)
Female	4 (2.3)
51−65	
Male	46 (26.4)
Female	15 (8.6)
66−75	
Male	34 (19.5)
Female	25 (8.6)
>75	
Male	17 (9.8)
Female	18 (10.3)
Atrial fibrillation type	
Paroxysmal	34 (19.5)
Persistent	140 (80.5)
Heart disease	97 (55.7)
Previous cardioversion	
0	24 (13.8)
1−3	90 (51.7)
>3	52 (29.9)
Unknown	8 (4.6)
Symptoms leading to ablation	
Palpitations	144 (82.8)
Dyspnea	83 (47.7)
Asthenia	90 (51.7)
Other	3 (9.8)
Catheter ablation	
1	117 (67.2)
2	40 (23)
≥3	6 (3.4)
Unknown	11 (6.3)
Postablation antiarrhythmic drugs	
Propafenone	20 (11.5)
Flecainide	41 (23.6)
Amiodarone-dronedarone	46 (24.4)
Combinations	11 (6.3)
None	56 (32.2)
Postablation antithrombotic therapy	
No	40 (23)
Antiplatelet agents	38 (21.8)
Oral anticoagulation	96 (55.2)

Table 5
Resource usage

Resources	Patients (n = 6,036)
Medical professionals predominately involved in AF management	
General practitioner	2,422 (40.1%)
Internist/geriatrician	1,17 (1.9%)
Out-hospital cardiologist	1,087 (18%)
In-hospital cardiologist	2,208 (36.6%)
Other	202 (3.3%)
Medical professional involved in oral anticoagulation therapy management	
General practitioner	
Rhythm control*	48 (6.6%)
Rate control†	263 (13.3%)
Specialists only	
Rhythm control*	566 (77.7%)
Rate control†	1,508 (76%)
In collaboration	
Rhythm control*	114 (15.7%)
Rate control†	212 (10.7%)
Hospitalizations for atrial fibrillation in previous 5 yrs	
No	
Rhythm control	1,414 (53.5%)
Rate control	2,029 (61.3%)
1−3	
Rhythm control	1,041 (39.4%)
Rate control	1,063 (32.1%)
>3	
Rhythm control	188 (7.1%)
Rate control	218 (6.6%)
Electrocardiographic Holter performed in previous 5 yrs‡	
No	2,833 (47.3%)
1−3	2,514 (42%)
>3	637 (10.7%)
Exercise tests performed in previous 5 yrs‡	
No	4,399 (73.5%)
1−3	1,327 (22.2%)
>3	258 (4.3%)
Echocardiograms performed in previous 5 yrs‡	
No	1,385 (23%)
1−3	3,518 (58.8%)
>3	1,081 (18.2%)
Electrophysiologic study performed in previous 5 yrs‡	189 (3.2%)

* Data from 728 patients.
† Data from 1,983 patients.
‡ Data from 5,984 patients.

recommendations and the results of other studies, β blockers were underused in both rhythm and rate control patient subgroups (29% and 37% in our study vs 48% and 62% in the study by LaPointe et al[9] and 75% in the Outpatient Registry Upon Morbidity of Atrial Fibrillation [ATRIUM] Registry,[12] respectively), and amiodarone was used more than expected among the rhythm control patients (18% in our study vs 9.2% and 9.6% in the AFFECTS Registry[10] and Central Registry of the German Competence NETwork on Atrial Fibrillation [AFNET],[11] respectively).

In the ISAF study, 62.6% of the patients with AF presented with a $CHADS_2$ score of ≥2 (qualifying for OAC therapy), and 46% actually received OAC therapy. Although this treatment rate was greater than reported in a community-based study performed in 2004 in Italy (32.3%), it cannot yet be considered satisfactory, in particular, compared with the results of some more recent observational studies performed in the United States (55%) and Germany (70%).[12,16,17] The reason for such a substantial difference lies almost exclusively in the discrepancy of OAC rate prescription between the rate and rhythm control patients. In the rate control subgroup, warfarin was prescribed to 73.2% of potential candidates for OAC therapy; however, in the rhythm control group, only 45.4% of potential candidates were prescribed OAC, although

documented contraindications were present in <1/2 (44.4%) of those who did not receive OAC.

To the best of our knowledge, the ISAF study is the first investigation reporting the indications and outcomes of catheter ablation of the AF substrate in real world clinical practice. Although the design of the ISAF study was not directed to assess such a specific issue, our findings provide some interesting insights into the Italian AF catheter ablation scenario. First, catheter ablation for AF was mainly performed in patients with persistent AF (80%) rather than in patients with paroxysmal AF. Such a finding differs from that reported in the study by Cappato et al,[18] in which only 40% of patients had persistent AF and can be explained by the attitude of Italian physicians to select patients with more symptomatic and severe arrhythmia for catheter ablation. Second, the success rate (50%) of AF catheter ablation reported in our study was lower than that described in previous studies (70% to 80%), despite a comparable repeat procedure rate.[18,19] Although it cannot be excluded that the high number of procedures performed for persistent AF and the long period of observation of the ISAF patients (5 years before data collection) might have contributed to this discrepancy, it is also possible that the real world success rate of AF ablation is lower than that reported by studies resulting from the experience of referral centers, as recently shown by Shah et al.[20] Third, in our patients, OAC and antiarrhythmic therapies were continued after AF ablation in a portion (55% and 68% respectively) of patients greater than that reported in published studies.[18] It is possible that the relatively low success rate of AF ablation observed in clinical practice might have played a significant role in these therapeutic choices.

The ISAF study has shown that 60% of patients with AF are treated by specialists (mainly cardiologists), with the remaining 40% left to the direct management of GPs. Our data have shown a fairly satisfactory level of autonomy of the Italian GPs in treating patients with AF that should be further extended to limit healthcare costs. Our data have also shown that in the 5 years preceding the study, approximately 40% of patients were hospitalized at least once because of AF. If, according to the British data, hospital admissions represent 50% of the total expenditure for AF management, the reduction of such a high event rate could result in significant costs savings for the national healthcare systems.[21,22] This suggests that additional efforts should be directed to improve the entire process of AF care through targeted educational interventions (e.g., specific guidelines for GPs, greater empowerment of patients with AF and their caregivers) and through greater involvement of GPs in the treatment of patients with AF assigned to rate control strategy once adequately trained by cardiologists.[23]

The present study had some limitations. Participation in the ISAF study was voluntary and restricted to those with a greater interest in clinical research. It is very likely that this did not affect the calculation of AF prevalence; however, it might have influenced AF management or treatment. Data have been provided as an "aggregate" and analyzed using standard descriptive statistics. This hampered the assessment of possible associations and relations within the data. No validation in the clinical diagnoses, AF classification, and rhythm/rate treatment strategy was possible. Relevant mistakes were, nevertheless, unlikely, because all the information was generally taken from hospital case records, electrocardiographic records, or specialist advice. It is possible that the diagnostic and therapeutic procedures were underrecorded. We tried to avoid such a bias by reviewing every single clinical record after the automatic extraction of data from the databases of the GPs.

Disclosures

The authors have no conflicts of interest to disclose.

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