Assessment of the Adherence of Cardiologists to Guidelines for the Treatment of Atrial Fibrillation

Cézar R. van der Sand, Tiago Luiz Luz Leiria, Renato Abdala Karam Kalil

Instituto de Cardiologia/Fundação Universitária de Cardiologia - Programa de Pós Graduação em Ciências da Saúde: Cardiologia, Porto Alegre, RS - Brazil

Abstract

Background: No local studies evaluating the knowledge of cardiologists on the management of atrial fibrillation (AF) and their adherence to these guidelines are available.

Objective: To evaluate the knowledge of cardiologists on the guidelines and clinical practices for the treatment of AF, correlating it to the time since medical graduation.

Methods: Cross-sectional study randomly including cardiologists affiliated to the Society of Cardiology of the State of Rio Grande do Sul (Sociedade de Cardiologia do Estado do Rio Grande do Sul – SOCERGS). The physicians were divided into two groups, according to time since graduation: those graduated for more (G1) or less (G2) than 25 years.

Results: Of the 859 SOCERGS members, 150 were interviewed, and six refused to participate in the study. G1 comprised 71 physicians, and G2, 73. Differences were observed in regard to the following variables: use of betablockers as the first-choice drug for the control of AF response in 59.2% (G1) vs 91.8% (G2) (p<0.0001); use of digoxin as the preferred drug for the control of AF response in 19.7% (G1) vs 0% (G2) (p< 0.0001); warfarin as the preferred anticoagulant in 71.8% (G1) vs 93.2% (G2) (p=0.009); application of a risk score for anticoagulation in 73.2% (G1) vs 87.7% (G2) (p=0.02). In questions regarding the knowledge about the Brazilian Society of Cardiology's guideline for AF, the overall percentage of right answers was 82.3%.

Conclusion: Most of the clinical measures regarding the management of AF comply with the guidelines, and the clinical practice differs according with the time since graduation. (Arq Bras Cardiol. 2013;101(2):127-133)

Keywords: Atrial Fibrillation, Anticoagulants, Guidelines.

Introduction

Clinical guidelines are important tools to minimize inappropriate care, to improve clinical practice, and to provide a measurement of its quality as well as a better cost-effective evidence-based option[1].

Despite worldwide development of clinical guidelines in the past decades, physicians' adherence to these guidelines has been below the expected in different medical areas. This is justified by the fact that they are considered impractical and too strict to be applied in patients. Also, they reduce the physician's autonomy[1,2].

In a survey among general practitioners in The Netherlands with the objective of verifying the reasons why the recommendations of 12 national guidelines were not being followed, the main reasons reported were: lack of agreement with the recommendations, environmental factors, lack of knowledge regarding the recommendations, and unclear or ambiguous recommendations[3]. In other studies, the recommendations were more likely to be followed when they were supported by clear evidence, were consistent with the existing standards and values, did not require new skills or changes in practice routines, were less controversial, and were strongly based on scientific evidence[4,5].

Although atrial fibrillation (AF) is the most common cardiac arrhythmia, with severe thromboembolic implications and high morbidity and mortality[5], accounting for approximately 33% of medical hospitalizations for arrhythmias[6,7], in Brazil, there are no assessments regarding the clinical practice in the treatment of AF or the level of cardiologists' knowledge of and adherence to the guidelines for AF[2-4].

The objective of this study was to evaluate the level of knowledge of and adherence to the more frequently used guidelines for AF in our midst[8-11], and to verify if there are knowledge differences between groups of cardiologists with different times since medical graduation, by means of the administration of a questionnaire.

Methods

This is a cross-sectional study including 150 cardiologists randomly chosen from a the list of members of the Society

Mailing Address: Renato Abdala Karam Kalil •
Av. Princesa Isabel, 370. Santana. Postal Code 90620-000, Porto Alegre, RS - Brazil
E-mail:kalil.pesquisa@gmail.com, editoracao-pc@cardiologia.org.br
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of Cardiology of Rio Grande do Sul (*Sociedade de Cardiologia do Rio Grande do Sul* – SOCERGS). The participants were divided into groups according to time since graduation, and were interviewed by phone or personally.

Calculation of the sample size was estimated assuming that 95% of the newly graduated physicians had some knowledge about the different guidelines for the treatment of AF, versus 75% of physicians graduated for a longer time. Thus, using an alpha error of 5% and a beta error of 20%, 98 interviewees would be necessary. A larger number of interviewees was included so that occasional subanalyses could be carried out and potential inconsistencies found in the data collection instrument could be compensated for.

The groups were previously defined between those with more or less than 25 years since graduation. This cut-off point, as well as the values for the calculation of the sample size, was based on a study previously conducted in another medical specialty, which demonstrated differences in the knowledge of physicians stratified for this time cut-off point[12].

The study population comprised clinical cardiologists affiliated to the SOCERGS, and the exclusion criteria were as follows: physicians working exclusively with arrhythmias, electrophysiologists, and pediatric cardiologists. The study was carried out between March and July 2012, and administered by one single researcher.

The assessment tool was a questionnaire that had been developed by three cardiologists affiliated to the Brazilian Society of Cardiology (*Sociedade Brasileira de Cardiologia* – SBC), and who worked mainly in the areas of clinical cardiology and clinical arrhythmology, invasive electrophysiology, and cardiac surgery with emphasis on surgeries for arrhythmias. The present tool comprised 26 topics and its objective was to assess:

1. Interviewee's working profile;
2. Adherence to guidelines for AF;
3. Drugs used to revert AF and control the heart rate (HR);
4. Assessment of anticoagulation, drugs used, complications, use of new anticoagulants, and risk scores for anticoagulation[13,14];
5. Practical use of surgery and percutaneous ablation of AF;
6. Assessment of the physician's knowledge and management of six class-I clinical settings of the SBC's Brazilian Guidelines for AF[11].

In regard to the last topic, the following clinical settings were hypothesized:

1. Do you prescribe anticoagulants for an 80-year-old woman with history of a ischemic stroke two years ago, with no permanent damage, and who has developed atrial fibrillation for three months?
2. Do you prescribe anticoagulants for an otherwise healthy 36-year-old man presenting with AF on routine electrocardiogram (ECG), with controlled HR, who is asymptomatic, and has no structural disease?
3. Do you indicate electrical cardioversion for patients with digitalis intoxication or hypokalemia?
4. Is a left atrial thrombus a contraindication for the performance of atrial fibrillation ablation?
5. Do you indicate surgical correction for AF in a patient requiring mitral valve replacement?
6. Do you indicate ablation for symptomatic AF in a young patient with a normal heart refractory to medication in the absence of metabolic disorders?

Depending on the question asked, the answers could be:

a) Stimulated and single (options were given and only one answer was accepted);

b) Stimulated and multiple (options were given and more than one answer was accepted)

c) Spontaneous and single (no options were given and only one answer was accepted);

d) Spontaneous and multiple (no options were given, and more than one answer was accepted).

The guidelines published and revised throughout the years by the Canadian (CHA), American (AHA), European (ESC) and Brazilian (SBC) societies[8,11] were used as references to prepare the questionnaire.

Data are expressed as a percentage of answers. The differences between groups were considered statistically significant when they were out of the study's maximum margin of error. For this purpose, the Mann Whitney test was used for the comparison of the continuous variables number of congresses attended, and work in the Single Health System (*Sistema Único de Saúde* – SUS), private health system, office and hospital. The Pearson's chi square test for the comparison of categorical variables between the groups ($p < 0.05$, 95% confidence interval) was used in the other comparisons. The data collected were analyzed using the PASW Statistics 19.0.0 statistical program (IBM – SPSS, Inc., 2009, Chicago, IL, USA).

Results

Of the 859 physicians affiliated to the SOCERGS, 150 were selected; of these, six refused to participate in the study. Therefore, 144 cardiologists (16.7% of the physicians affiliated to the SOCERGS) were included. In the randomized selections of interviewees, none met any of the exclusion criteria.

Of the 144 cardiologists interviewed, 80.6% were men, 66.6% worked in the State capital, and 50% attended at least two congresses a year. Of the total, 52.1% did not see SUS patients.

Of the physicians who agreed to participate in the study (Figure 1), 71 were graduates for more than 25 years (G1), and 73, for less than 25 years (G2). G1 physicians spent more time working in their private offices, with a significant statistical difference between the groups (Table 1).

As regards the adherence to guidelines for AF, 9.9% (G1) versus 1.4% (G2) ($p = 0.02$), did not follow any guideline. The guidelines more frequently followed were SBC's, with no difference between groups. Table 1 shows the percentage of use of the other guidelines.

The drugs used as the first choice for HR control in AF are shown in Table 2; significant differences were observed between groups as regards the type of drugs used.

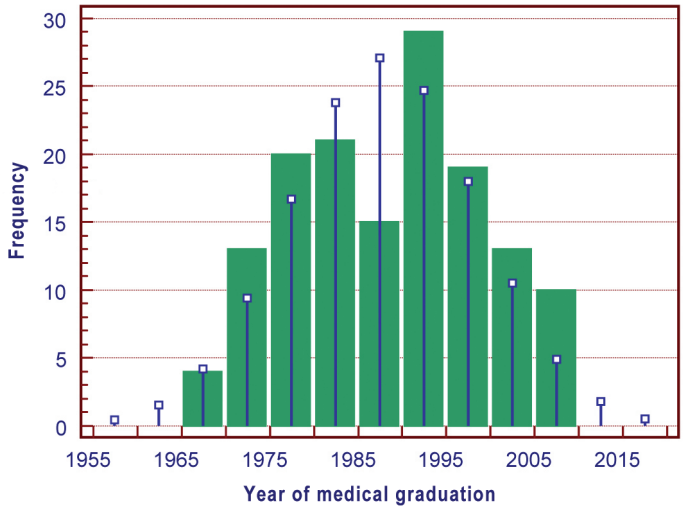

Figure 1 - *Distribution of physicians by years since graduation.*

Amiodarone and propafenone are preferably used to reverse AF, with no differences in the frequency of use of these drugs between the study groups.

Of the physicians graduated for a longer time, 59.3% reported that they assess the prothrombin time (PT) of their anticoagulated patients on a monthly basis, versus 72.6% of the younger group (p = 0.13). The percentage of patients not receiving anticoagulants, but who were supposed to be anticoagulated was 14.4% (G1), versus 19.4% (G2) (p = 0.56).

The main reasons for not using anticoagulation therapy were: patient's low intellectual level in 71.8% (G1) and 86.3% (G2) (p=0.03); history of previous bleeding in 64.8% (G1) and 53.3% (G2) (p=0.11); blood disorders in 12.7% (G1), versus 8.2% (G2) (p=0.38); liver diseases in 11.3% (G1) and 6.8% (G2) (p=0.35); and patients older than 80 years of age in 16.9% (G1) versus 11% (G2) (p = 0.34).

Warfarin was the most frequently used anticoagulant in 71.8% (G1) compared to 93.2% (G2) (p = 0.009) (Table 3). When the interviewees were asked about the percentage of patients who discontinued anticoagulation therapy permanently due to severe complications, 91.5% (G1) and 90.4% (G2) reported less than 5%. The main reasons for permanent discontinuation were gastrointestinal hemorrhage (83%) and hemorrhagic stroke (91.8%), with no statistical significance between the groups.

The use of a risk score for anticoagulation is less frequent among physicians graduated for a longer time, 73.2% (G1) versus 87.7% (G2) (p=0.02); the percentages of use of the different scores are shown in Table 3.

In regard to the use of new anticoagulants, we assessed the use of dabigatran, the only representative of the new class available in the Brazilian marked at the time of the study. In new patients to be anticoagulated, the mean frequency of use was 28.2% (G1) versus 22.3% (G2), with no statistical difference between the groups.

In regard to invasive procedures for the treatment of AF, the mean number of patients undergoing ablation of AF was 2.82 (G1) and 3.42 (G2) and, in the case of surgery for AF in correction of mitral valve disease, 0.94 (G1) and 1.11 (G2). No statistically significant differences were observed in any of the cases.

Six clinical settings were also presented to evaluate the physicians' knowledge of and adherence to SBC's guidelines, all with correct answers related to class I; differences were observed especially in questions regarding the invasive treatment of AF. The results are shown in Table 4.

Discussion

The guidelines issued by the Societies of Cardiology should be observed so that the best result could be achieved in patients' care, because these documents are developed by specialists after exhaustive literature reviews and peer discussions, and supported by clear scientific evidence. This is a pioneering survey in our midst, which showed that the time since graduation seems to be a differential factor in decision making regarding medical therapies for patients with AF. This seems to be also true when treatment decisions made by colleagues from other medical specialties are analyzed, in relation to the time since medical graduation[12].

We observed that there were no statistically significant differences in the knowledge about guidelines for AF among physicians graduated for either a longer or shorter time. However, approximately 10% of the cardiologists graduated for more than 25 years do not adhere to any guideline, and a significant percentage does not use any risk score before starting anticoagulation therapy. Thus, we can

Table 1 - Characteristics of the interviewees

Characteristics	Time since Graduation		
	+25 years n=71	- 25 years n=73	p
Male	56	60	0.38*
Female	15	13	
Number of congresses/year	2.6	2.3	0.14†
Working at private services	89.8%	76.6%	0.001†
Working at SUS	10.2%	23.1%	0.001†
Working at office	72.3%	56.0%	0.002†
Working at Hospital	27.7%	43.0%	0.004†
Adheres to some Guideline	90.1%	98.6%	0.03*
SBC guideline	67.6%	61.6%	0.28*
AHA guideline	36.6%	35.6%	0.51*
ESC guideline	22.5%	35.6%	0.38*
Canadian guideline	9.9%	4.1%	0.15*

SUS: Sistema Único de Saúde (Single Health System); AHA: American Hearth Association; ESC: European Society of Cardiology. (*)Pearson's chi-square test;(†) Mann-Whitney U test.

Table 2 - Drugs used in heart rate control

Treatment of AF	Time since graduation			
	+ 25 years n=71	- 25 years n=73	Total	p*
HR control				
Amiodarone	21.1%	8.2%	14.6%	0.028
Betablocker	59.2%	91.8%	75.7%	0.001
Digoxin	19.7 %	0.0%	9.7%	0.001
Reversal of AF				
Amiodarone	84.5%	80.8%	82.6%	0.350
Propafenone	15.5%	19.2%	17.4%	0.570

AF: atrial fibrillation. (*) Pearson's chi-square test.

conclude that there is knowledge about the guidelines for AF, but their practical application by physicians graduated for a longer time is less frequent, probably because of the difficulty to change treatment habits incorporated in the practice routine. This seems to corroborate international data, which showed that the implementation of new routines proved to be a limiting factor for a better care, especially for more complex new routines[13,14]. The number of physicians who reported they knew the guidelines is in accordance with data from the international literature[15]. However, the attitudes regarding the adherence to these recommendations seem to differ in our study group.

Physicians graduated for a longer time still frequently use digoxin as the first option for HR control, whereas physicians graduated for a shorter time hardly ever use this drug for HR control.

Phenprocoumon is less commonly used by physicians graduated for a shorter time, although a local study has demonstrated a better therapeutic control in comparison to warfarin[16,17]. Perhaps this finding can be explained by the fact that this vitamin-K antagonist is not available in the North American market, therefore it is not mentioned in the guidelines for AF of their societies. Although phenprocoumon is widely used in Europe, this does not seem to influence the practice of physicians graduated for a shorter time.

The use of dabigatran, in turn, was more frequent among physicians graduated for more than 25 years, with no statistical difference between the groups, with more physicians prescribing it in their private offices in comparison to physicians working at SUS. Since the group of physicians graduated for a shorter time works more frequently at SUS, the more wide use of dabigatran by physicians graduated for

Table 3 – Anticoagulation therapy

Anticoagulation therapy	Time since graduation		
	+ 25 years n=71	- 25 years n=73	p*
Monthly Prothrombin Time	59.2 %	72.6 %	0.13
No anticoagulation therapy	14.4 %	19.3 %	0.56
Low intellectual level	71.8 %	86.3 %	0.03
Previous bleeding	64.8 %	53.3 %	0.11
Blood disorder	12.7%	8.2 %	0.38
Liver diseases	11.3 %	6.8 %	0.35
Elderly (+ 80 years)	16.9 %	11.0 %	0.34
On warfarin	71.8 %	93.2 %	0.009
On phenprocoumon	21.1%	5.5 %	0.009
A risk score applies	73.2 %	87.7 %	0.02
CHADS 2	46.5 %	50.7 %	0.64
CHADS 2 VASC	38.0 %	46.6 %	0.29
HAS BLED	15.5 %	20.5 %	0.43

CHADS2 – Acronym for "Congestive heart failure, Hypertension, Age, Diabetes, Stroke." ; CHADS2VASC –Acronym for "Congestive heart failure, Hypertension, Age, Diabetes, Stroke, VASCular disease."; HAS-BLED Acronym for "Hypertension, Abnormal renal/liver function, Stroke, Bleeding history, Labile INR, Elderly, Drugs/alcohol". (*)Pearson's chi square test.

Table 4 – Percentage of correct answer according to the Brazilian Guidelines for AF

Questions Correct	Time since graduation			
	+ 25 years n=71	- 25 years n=73	Total	p*
1†	85.9 %	93.2 %	89.6 %	0.15
2‡	63.4 %	71.2 %	67.4 %	0.31
3"	94.4 %	95.9 %	95.1 %	0.62
4¶	76.1 %	90.4 %	85.3 %	0.02
5#	62.0 %	76.1 %	69.4 %	0.05
6**	90.1 %	89.0 %	89.6 %	0.82

(*)Pearson's chi square test; (†)Do you prescribe anticoagulants for an 80-year-old woman with history of a ischemic stroke two years ago, with no permanent damage, and who has developed atrial fibrillation for three months?;(‡)Do you prescribe anticoagulants for an otherwise healthy 36-year-old man presenting with AF on routine electrocardiogram (ECG), with controlled HR, who is asymptomatic, and has no structural disease?; (")Do you indicate electrical cardioversion for patients with digitalis intoxication or hypokalemia?; (¶)Is a left atrial thrombus a contraindication for the performance of ablation of atrial fibrillation?; (#)Do you indicate surgical correction for AF in a patient requiring mitral valve replacement?; (**)Do you indicate ablation for symptomatic AF in a young patient with a normal heart refractory to medication in the absence of metabolic disorders?

a longer time seems to be a bias, probably because of the high cost of the treatment. Unlike in Canada and England, where the government subsidizes these medications, the public health system in Brazil does not yet provide these medications for free or at a subsidized cost.

When asked about the main reason for not using anticoagulation therapy in a patient with indication to receive this treatment, the patient's low intellectual level was the main cause reported by physicians of both groups, but especially by physicians graduated for a shorter time, precisely those who belong to the group that more frequently work at SUS. This attitude may reflect a greater concern about non-compliance and potential adverse risks that may be fatal with this group of medications. However, this approach may be mistaken, because a study conducted in our institution, in SUS patients treated with oral anticoagulation therapy, showed a good compliance rate, with a good percentage of prothrombin time within the therapeutic target, and a low incidence of adverse events, even in patients with polypharmacy and a low intellectual level[18,19].

In relation to invasive procedures for the treatment of AF, a higher frequency of their use was observed among physicians graduated for a shorter time. However, this

frequency seems to be lower than the desired one, because these therapies are recommended for these cases by both the guidelines and randomized studies[9,11,20,21].

Another interesting finding was the absence of calcium-channel blockers as the first option for HR control by any of the group of physicians, although studies have demonstrated that this group of medications is associated with better clinical outcomes in comparison to other drugs used for the same purpose[22,23].

The use of amiodarone as the first choice for HR control by 14.60% of cardiologists seems inadequate, because the use of this drug is recommended not for these cases, but for patients with ventricular dysfunction and AF with rapid response, for whom rhythm control was not successful, or for those acutely ill with AF and rapid response associated with ventricular dysfunction[8,9,11]. Maybe this group believes that the drug will act in reverting the sinus rhythm even in chronic patients. This seems to be true in other groups studied[24]. Another fact that has already been proved in the literature is that amiodarone seems to be the drug of choice for rhythm control in South America[25]. This figure is similar to the rate of use of amiodarone in Canada where, however, it is used with the purpose of rhythm control[23].

This study has some limitations, since data were obtained from direct interview with physicians, without assessment of medical records or patients' interview; this can determine discrepancies between what was reported and what really is applied in the daily clinical practice. Also, only a small part of SOCERGS's affiliated physicians was interviewed, and this limits the analysis of the overall opinion of members or even of cardiologists in the state of Rio Grande do Sul. Another aspect is the external validity of this study, since these data cannot be extrapolated to all Brazilian cardiologists, given that each region has its own particularities, especially in a country of such a vast size.

Conclusions

This study demonstrated that a significant number of physicians interviewed has a knowledge of the main societies' recommendations for the management of patients with AF. Adherence to these guidelines, which contain what is effectively done in the daily clinical practice, is lower in the group graduated for a longer time. This difference occurs mainly in regard to the management of anticoagulation therapy, the use of antiarrhythmic drugs, and indication of invasive treatments for the control of arrhythmia. Therefore, in this sample, time since medical graduation had an influence on the clinical practice, with longer times related to less frequent adherence to medical guidelines for the management of AF.

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Author contributions

Conception and design of the research, Writing of the manuscript and Critical revision of the manuscript for intellectual content: van der Sand CR, Leiria TLL, Kalil RAK; Acquisition of data and Obtaining funding: van der Sand CR; Analysis and interpretation of the data and Statistical analysis: van der Sand CR, Leiria TLL.

Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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Study Association

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