

Impaired quality of life in patients with intermittent atrial fibrillation

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ABSTRACT

Objective: The quality of life (QoL) is impaired in patients with atrial fibrillation (AF). However, the data on the perceived QoL of patients with different types of AF is limited. In this study, we investigated the QoL of patients with intermittent and chronic AF.

Methods: The study was designed as an observational cross-sectional study, and 135 consecutive patients with documented AF admitted to the cardiology outpatient clinic in a tertiary hospital were recruited. The pattern of AF was classified as intermittent or chronic AF. The European Heart Rhythm Association (EHRA) classification and symptom severity score were used to quantify the symptoms related to AF. The QoL was assessed by the Short Form-36 and the Canadian Cardiovascular Society Severity in Atrial Fibrillation (SAF) scale.

Results: Thirty-nine percent of the patients (n=52) had intermittent AF and 61% (n=83) had chronic AF. In the overall patient population, 92% reported having at least one of the symptoms that can be attributable to AF. Although the prevalence of symptoms were similar in patients with intermittent or chronic AF, the patients with intermittent AF perceived more severe palpitations (symptom severity score 2.4±1.7 vs. 1.5±1.5, p=0.003). Patients with intermittent AF had higher EHRA and SAF scores than the patients with chronic AF (2.6±0.9 vs. 1.9±0.8, p<0.001; 2.5±1.3 vs. 1.7±1.2, p<0.001, respectively).

Conclusion: Outpatients with AF have a high prevalence of symptoms and impaired QoL. The impairment of subjective health-related QoL is worse in patients with intermittent AF (*Anatol J Cardiol* 2016; 16: 250-5)

Keywords: atrial fibrillation, quality of life, symptoms

Introduction

Atrial fibrillation (AF) is the most common arrhythmia, affecting 1%–2% of the general population (1-3). A previous cross-sectional study has shown that the prevalence and incidence of chronic AF in Turkish adults were 1.25% and 1.35 per 1000 person years, respectively (4). Prevention of stroke is the cornerstone of the therapy and may require long-term anticoagulation (1, 5). Anticoagulant therapy is individualized based on the patient's risk of thromboembolism and bleeding (1, 6). On the other hand, prospective randomized studies comparing a strategy of heart rhythm control with a strategy of heart rate control have failed to establish a significant mortality or stroke benefit with either strategy (7-13). Therefore, reducing symptoms and improving the quality of life (QoL) have become the basis for the selection of the optimal treatment strategy in patients with AF (1).

Health-related QoL is impaired in patients with AF (10-12). Although there is a relationship between the perceived QoL and

the symptoms, even asymptomatic patients with AF have been found to have impaired QoL compared with healthy controls (13, 14). Most of the published literature on the issue of QoL is derived from the data obtained from the studies that focused on the rate and/or rhythm control strategy in highly symptomatic patients rather than a general population of patients with AF (15-20). However, data concerning the perceived QoL in outpatients with different types of AF is still limited in the current literature (21).

In this study, we planned to compare the clinical presentation with respect to the symptomatology and QoL of patients with intermittent or chronic AF in the outpatient clinic.

Methods

The current study was designed as an observational cross-sectional study, which was conducted at the cardiology outpatient clinic in a tertiary hospital between March 2013 and October 2013. Outpatients with ≥1 AF episode documented by

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electrocardiogram (ECG) or Holter monitoring were invited to participate in the study. The pattern of AF was classified as intermittent or chronic AF. Patients who had at least one documented episode of paroxysmal AF (spontaneously self terminating) or patients who had persistent AF, which had been converted successfully to sinus rhythm by medical or electrical cardioversion, were included in the intermittent AF group. Chronic AF was defined as permanent or persistent AF, with continuous duration lasting more than 6 months. Detailed anamnesis, ECG records, previous hospital documents, and Holter records were taken into consideration to categorize patients as chronic or intermittent AF. Patients who were illiterate or unable to self-administer the questions or unwilling to participate in the study were excluded from the study. At power analysis, it was considered necessary to enroll at least 51 patients in each study arm (intermittent and chronic AF) to achieve 80% power in comparisons (22).

A total of 172 consecutive patients admitted to the cardiology outpatient clinic with ≥ 1 AF episode were invited to participate in the study, and 135 patients who were willing to provide informed consent were recruited. Of the 172 patients, 29 patients who were illiterate or unable to self-administer the questions and eight patients who were unwilling to participate in the study were excluded. Data on sociodemographic characteristics as well as clinical data, including medical history, treatment strategy, symptoms, current medications, underlying heart diseases, and other co-morbidities, were recorded. A 12-lead ECG and transthoracic echocardiography were performed.

The physicians classified the symptoms of patients according to the "European Heart Rhythm Association (EHRA) class" and also rated "Severity in Atrial Fibrillation (SAF) class" to assess the symptoms and their effects on QoL for every patient. The patients were asked to complete a questionnaire including questions regarding the frequency of arrhythmia episodes (≥ 1 /month, 2–6 times/year, ≤ 1 /year) as well as the presence and severity of individual symptoms attributable to AF (palpitations, shortness of breath at rest, shortness of breath during physical activity, exercise intolerance, weakness, lightheadedness/dizziness, chest pain). The severity of symptoms were scored on a 5-point Likert scale (appendix), with higher scores indicating more severe symptoms (10, 23). The score of each symptom was summed to obtain the "symptom severity score," which ranges from 0 to 35, with higher scores indicating more severe symptoms related to AF. Subsequently, all patients completed the Short Form 36 (SF-36), which is a generic QoL instrument. The study protocol was approved by the local Ethics Committee.

The outcome measures

The Canadian Cardiovascular Society SAF is a scale used by physicians to assess the functional consequences of symptoms and to quantify the effect of AF on the patient's QoL (24). The SAF class ratings range from 0 (asymptomatic) to 4 (severe impact of symptoms on QoL and activities of daily living).

The European Heart Rhythm Association (EHRA) classification is an AF symptoms score (25). It provides a simple quantification of symptoms that are attributable to the functional consequences of AF. Four EHRA classes are defined as follows: class I, no symptoms; class II, mild symptoms; class III, severe symptoms; and class IV, disabling symptoms.

SF-36 is a widely used generic health-related QoL scale, with 36 items combined into eight domains to measure physical functioning, functioning role, social functioning, mental health, vitality, pain, and general health perceptions (26).

Statistical analysis

Continuous variables were presented as mean \pm standard deviation or median values with interquartile range. Categorical variables were presented as percentages. Distributions of continuous variables were determined by the Kolmogorov–Smirnov test. Group differences for continuous variables were examined by an unpaired Student's t-test or by the Mann–Whitney U test. In the case of categorical variables, comparisons between groups were made with Fisher's Exact Test or Pearson's chi-square test. The correlations between the the scores of outcome measures (SF-36, EHRA, SAF classes) and clinical characteristics were determined using Pearson's correlation. Power analysis was conducted to assess the minimum sample size, and it was considered necessary to enroll a patient group of at least 51 patients in each study arm to achieve 80% power in comparisons. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 16.0 for Windows (Chicago, IL, USA). All tests were two-sided, and a p value < 0.05 was considered statistically significant.

Results

A total of 135 patients were included in the study; 39% (n=52) had intermittent AF and 61% (n=83) had chronic AF. Of the total study population, 28% had valvular AF. Valvular AF was more prevalent in patients with chronic AF than that in patients with intermittent AF (37% vs. 12%, $p=0.001$). Sociodemographic and clinical data are summarized in Table 1.

Among patients with chronic AF, 34% had a heart rate of ≤ 80 beats/min, 52% had a heart rate of 80–110 beats/min, and 14% had a heart rate of ≥ 110 beats/min. Among patients with intermittent AF, irregular heart rhythm occurred ≥ 1 times/month in 69% of the patients and 2–6 times/year in 13% of the patients, while 18% reported of having ≤ 1 AF episodes per year. There were no significant differences between the two groups of patients with respect to the number of cardioversions, hospital admissions, and emergency room visits. However, hospitalizations due to irregular heart rhythm within the last year were higher in the group with intermittent AF (Table 1).

In the overall patient population, only 8% (n=11) reported no symptoms attributable to AF (palpitations, shortness of breath at rest, shortness of breath during physical activity, exercise intol-

Table 1. Sociodemographic and clinical characteristics of the patients

	Intermittent AF (n=52)	Chronic AF (n=83)	P
Age, years [median (interquartile range)]	63 (55-69)	64 (56-72)	0.39
Male	29 (56%)	49 (59%)	0.70
LV EF (%)	58.8±7.0	53.4±11.2	<0.001
LA dimension, mm	42.9±5.4	48.2±7.6	0.02
Hypertension	26 (50%)	50 (60%)	0.24
Diabetes mellitus	9 (17%)	19 (23%)	0.43
Valvular heart disease	6 (12%)	31 (37%)	0.001
Coronary artery disease	9 (17%)	17 (20%)	0.64
Cardiomyopathy	3 (6%)	14 (17%)	0.06
Congenital heart disease	2 (4%)	1 (1%)	0.31
Pacemaker	6 (11%)	3 (4%)	0.07
Prior embolic event	5 (10%)	13 (16%)	0.31
Number of CV's	0.4±0.9	0.3±0.9	0.70
Number of emergency room visits [†]	1.5±2.2	1.2±2.2	0.48
Number of hospitalizations [†]	0.9±1.2	0.5±0.8	0.03
Number of specialist visits [†]	3.3±3.5	3.5±5.0	0.72
Drugs			
Amiodarone	12 (23%)	1 (1.2%)	<0.001
Propafenone	10 (19%)	1 (1.2%)	<0.001
Beta blocker	28 (54%)	50 (60%)	0.46
Verapamil	4 (7.7%)	6 (7.2%)	0.92
Diltiazem	5 (9.6%)	11 (13.3%)	0.52
Digoxin	4 (8%)	19 (23%)	0.02
Warfarin	29 (56%)	62 (75%)	0.02
Acetylsalicylic acid	13 (25%)	18 (22%)	0.65
Clopidogrel	5 (9.6%)	6 (7.2%)	0.62
Data is presented as mean±standard deviation [†] within the past year			
AF - atrial fibrillation; CV - cardioversion; LA - left atrium; LV EF - left ventricle ejection fraction.			
The comparisons of categorical variables between the groups were made with Fisher's Exact Test. Continuous variables were compared by using unpaired Student's t-test, except for the "Age" variable which was compared with the Mann-Whitney U test.			

erance, weakness, lightheadedness/dizziness, chest pain). The patients in the intermittent AF group perceived more severe palpitations than the patients with chronic AF (Table 2). The prevalence and severity of other symptoms attributable to AF were not different between the two groups (Table 2).

The mean scores for the EHRA and SAF scales, both of which quantify symptoms and their impact on patient's daily living and functionality, were higher in patients with intermittent AF than those in patients with chronic AF (2.6±0.9 vs. 1.9±0.8,

p<0.001; 2.5±1.3 vs. 1.7±1.2, p<0.001, respectively). Patients with chronic AF tended to have lower EHRA and SAF scores than those in patients with intermittent AF (Table 3, 4). However, the scores for the subscales of SF-36 were comparable between the intermittent and the chronic AF groups (Table 5).

In the overall patient population, the EHRA and SAF scores were highly correlated with total symptom severity (r=0.74, p<0.001; r=0.74, p<0.001, respectively) and the frequency of AF episodes (r=0.53, p<0.001; r=0.59, p<0.001, respectively). However, they were weakly correlated with the rate of AF (r=0.35, p<0.001; r=0.24, p=0.009) and age (r=-0.18, p=0.03; r=-0.17, p=0.03). We also found a significant correlation between the SAF scores and the scores of the subscales of SF-36 (Table 6).

Discussion

The present study demonstrated that most of the patients with AF admitted to the outpatient cardiology clinic of Atatürk Education and Research Hospital have symptoms and impaired QoL. It has also been shown that health-related QoL is poor in patients with intermittent AF. Patients with AF present with a wide array of clinical presentations, ranging from asymptomatic to a variety of different symptoms occurring in a wide range of frequencies and durations (27). Symptom reduction and improvement of the patient's well being are important objectives in the management of patients with AF (1). Patient's well being is generally expressed as QoL, which is a subjective phenomenon and generally does not correlate with the objective measures of disease severity (28). QoL is generally assessed by administering standardized questionnaires (such as SF-36) or by validated scales (such as the SAF scale).

In the current study, symptoms and functional impairment were quite common in patients with either chronic or intermittent AF. Most of the patients in both groups reported having at least one of the symptoms that can be attributable to AF. Moreover, we found that patients with intermittent AF had a worse impairment of QoL than the patients with chronic AF. A previous international registry data demonstrated that patients with either controlled or uncontrolled AF have a high symptom burden and impaired QoL (29). In this cross-sectional registry, 74% of the patients with AF had symptoms. Likewise, in the EUROHEART Survey on AF, 69% of the patients were symptomatic (30). Lévy et al. (31) investigated the clinical characteristics of the patients with different types of AF and demonstrated that symptoms were present in 89% of the patients, and the patients with paroxysmal AF reported more severe symptoms than the patients with chronic AF. In the present study, patients with intermittent AF not only reported more severe palpitations but also had worse impairment of QoL, as assessed by the EHRA and SAF scales, which were specifically designed to describe the symptoms and their functional consequences on the patient's QoL. The scores of the SAF and EHRA scales were correlated with the scores of the subscales of SF-36. However,

Table 2. Presence and severity of symptoms attributable to AF with respect to intermittent or chronic AF

	Intermittent AF (n=52)		Chronic AF (n=83)		P*	P†
	Prevalence	Severity†	Prevalence	Severity†		
Palpitations	39 (76%)	2.4±1.7	50 (60%)	1.5±1.5*	0.13	0.003
Shortness of breath at rest	25 (49%)	1.4±1.6	38 (46%)	1.1±1.4	0.47	0.24
Shortness of breath during physical activity	35 (68%)	2.0±1.7	59 (71%)	2.0±1.6	1.0	0.97
Exercise intolerance	40 (77%)	2.1±1.7	61 (73%)	2.1±1.6	0.40	0.89
Fatigue at rest	35 (68%)	1.7±1.6	47 (57%)	1.3±1.4	0.58	0.11
Lightheadedness/ dizziness	33 (63%)	1.8±1.7	49 (59%)	1.4±1.5	0.58	0.24
Chest pain or pressure	25 (49%)	1.3±1.6	36 (44%)	1.0±1.3	0.71	0.17
Total symptom severity		12.5±8.8		10.2±8.2		

AF - atrial fibrillation

†The patients scored severity of symptoms on a 5-point Likert scale, with higher scores indicating more severe symptoms. The numbers indicate the range of scores.

*The p value for the comparison of data with respect to the prevalence of symptoms between patients with intermittent and chronic AF. The data was compared using the chi-square test.

†The p value for the comparison of data with respect to the symptom severity scores between patients with intermittent and chronic AF. The data was compared using the unpaired Student's t-test.

Table 3. EHRA scores for patients with intermittent and chronic AF

	EHRA 1	EHRA2	EHRA 3	EHRA 4
Intermittent AF (n=52)	7 (13%)	17 (33%)	17 (33%)	11 (21%)
Chronic AF (n=83)	26 (31%)	38 (46%)	15 (18%)	4 (5%)

AF - atrial fibrillation; EHRA - European Heart Rhythm Association

P value for the comparison of EHRA scores between the patients with intermittent or chronic AF is <0.001. The data was compared using Pearson's chi-square test.

Table 4. SAF scores for patients with intermittent and chronic AF

	SAF 0	SAF 1	SAF 2	SAF 3	SAF 4
Intermittent AF (n=52)	3 (6%)	12 (23%)	7 (13%)	13 (25%)	17 (33%)
Chronic AF (n=83)	14 (17%)	24 (29%)	21 (25%)	17 (21%)	7 (8%)

AF - atrial fibrillation; SAF - severity in atrial fibrillation

P value for the comparison of SAF scores between the patients with intermittent or chronic AF is 0.02. The data was compared using Pearson's chi-square test.

patients with intermittent and chronic AF have similar SF-36 scores. The SF-36 is a generic health-related QoL questionnaire and is not specific for AF. The comorbidities such as left ventricular systolic dysfunction and valvular heart disease were more prevalent in patients with chronic AF. Therefore, the comorbid medical conditions may have influenced the results of the generic QoL instrument SF-36. These factors may be the reason for the lack of a difference between patients with intermittent and chronic AF with respect to SF-36 scores. On the other hand, there is a clear distinction between the two groups with respect to the EHRA and SAF scores, which are more AF specific.

There is limited data on the perceived QoL of patients with different types of AF. Peinado et al. (32) investigated the influence of the type of AF on the patient's QoL using a different AF-specific questionnaire (Atrial Fibrillation-Quality of Life:

Table 5. Scores of the SF-36 subscales in patients with intermittent and chronic AF

	Intermittent AF	Chronic AF	P
Physical functioning	62.9±28.1	68.3±27.6	0.72
Physical role	48.5±42.4	50.6±43.1	0.71
Body pain	61.7±27.4	65.5±27.2	0.96
General health	50.7±24.0	51.6±22	0.45
Vitality	50.4±24.7	52.4±22.0	0.31
Social functioning	68.2±24.2	71.5±25.5	0.36
Emotional role	50.5±43.5	49.3±45.1	0.36
Mental health	61.1±21.6	62.5±19.8	0.46

The data was compared using unpaired Student's t-test

AF-QoL) and found that there were no differences in the perceived QoL with respect to the type of AF. However, patients with permanent AF exhibited better QoL in the psychological dimension. In the present study, the SAF scale was used as an AF-specific QoL instrument, and patients with intermittent AF were found to have a poor QoL. The SAF scale incorporates the subjective severity of AF symptoms and their effects on the patient's physical, emotional, and social well-being (23). However, this scale does not discriminate between the physical, emotional, or social dimensions. On the other hand, we found no difference on the psychological dimensions of SF-36 between the patients with intermittent or chronic AF. The discordance of the results of this study with our results may be related to the differences in the instruments used to measure QoL as well as to the different patient characteristics. Peinado et al. (32) have enrolled patients referred to arrhythmia specialists, most of whom had paroxysmal or persistent AF. On the other hand, all patients that

Table 6. Correlation between SAF and SF-36 scores

	Physical functioning	Physical role	Body pain	General health	Vitality	Social functioning	Emotional role	Mental health
SAF	-0.57	-0.59	-0.32	-0.32	-0.53	-0.42	-0.34	-0.37
P value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

SAF - severity in atrial fibrillation classification; SF-36 - Short Form-36. For SF-36 domains, higher scores indicate better perceived health. For SAF classification, increasing scores indicate increasing symptoms and poor impact on the quality of life. The correlations were determined by using Pearson's correlation.

were included in the present study were ordinary outpatients, and most of them had permanent AF rather than paroxysmal or persistent AF.

Study limitations

We used the SAF scale and SF-36 to assess the patients' QoL and the EHRA scale to evaluate AF-related symptoms. The SAF scale has been validated to measure the QoL in patients with AF but may have a bias effect because it is rated by the physicians. The SF-36 is a generic QoL instrument and does not focus on AF-related symptoms. Therefore, using a disease-specific questionnaire in addition to the SAF scale would have strengthened our results. In addition, illiterate and old patients who could not self-administer the questionnaires were not included in the study. This may have caused a selection bias.

Conclusion

Patients with AF in routine clinical practice have a high prevalence of symptoms and impaired QoL. The impairment of subjective health-related QoL is worse in patients with intermittent AF. These data suggest that a targeted therapy should be implemented to improve the QoL in patients with intermittent AF.

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