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Research Article

Impact of Return to Sinus Rhythm on Quality of Life in Patients with Atrial Fibrillation

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Abstract:

Improving quality of life in AF is a clinical issue in the management of this disease. The choice of therapeutic strategy; rhythm or rate control would influence the parameters of quality of life assessment. The aim of our study was to describe the impact of maintaining sinus rhythm after cardioversion on the quality of life of patients followed for AF.To do this we conducted a prospective descriptive study including 24 patients followed for paroxysmal, persistent and prolonged persistent AF. Quality of life was assessed by two scores (AFEQT, SF-36) validated for atrial fibrillation. The average age of our population was 53.3 years. Half of our sample had no underlying heart disease. We observed an improvement in quality of life in patients who maintained sinus rhythm. A contradictory result was observed in patients who had a recurrence of the arrhythmia. We also found that age, treatments and comorbidities influenced the quality of life of patients followed for AF. The results found in our study are consistent with the literature; the differences found are probably related to the size of our random sample and the number of scales used to assess quality of life.

The use of quality of life scores could be a key issue for the follow-up of these patients in order to integrate a global management approach.

Keywords: Atrial fibrillation- cardioversion- quality of life- sinus rhythm.

Introduction

Atrial fibrillation is the most common cardiac rhythm disorder in medical cardiology practice [1]. Early identification of patients with AF would help to reduce the serious thromboembolic complications.

One of the major treatment issues in AF, apart from medical treatment, is the improvement of the quality of life of the patients which is altered [2].

The assessment of quality of life in AF can be measured using generic or more disease-specific instruments [3,4].

Many scales have been validated to assess and investigate the AF patient's perception of the disease. It is therefore important that the choice of management strategy takes into account the improvement of patients quality of life.

The aim of our study is to demonstrate whether maintaining sinus rhythm influences the quality of life of patients with AF, as part of this new approach to the overall (physical and psychological) management of the atrial fibrillation.

Material and Methods

This is a prospective descriptive study conducted in the Cardiology Department B at the Ibn Sina University Hospital in Rabat. It was carried out between January 2021 and January 2022. The study enrolled all patients followed in rhythmology consultation and candidates for cardioversion during the study period.

Inclusion criteria:

- Patients with symptomatic, paroxysmal, persistent, long-term persistent AF.
- Patients who have received pharmacological or electrical cardioversion in emergency or programmed.

Exclusion criteria:

- Patients in permanent AF
- Patients in whom post-cardioversion follow-up was difficult
(Difficulty to follow up or to respect consultation appointments)

Data collection was carried out from the patients' medical records. The evaluation of the quality of life and the functional impact

of atrial fibrillation was carried out before cardioversion, 1 month after, 3 months and then 6 months after the procedure. There are two quality of life (QOL) scales that have been validated for AF.

The AFEQT (Atrial fibrillation effect on quality) questionnaire was validated in 2010 by an American team from the Mid America Heart Institute and the process undertaken was detailed in a publication in February 2011 in the AHA Journal. The psychometric scale includes 4 domains of assessment: symptoms; daily activities; feelings about treatment; satisfaction with treatment effects.
High final scores (approaching 100) define good health.
The other QOL scale used in our study is the SF-36. This is a questionnaire from the Medical Outcomes Study that assesses 8 dimensions of the patient's perception of their health status.

These domains of evaluation are:

- Limitation of the patient's activities or role in daily life due to: physical, emotional, lack of vitality (fatigue, lack of energy), physical pain and psychological well-being
- Social functioning
- Perception of the disease

A score at the end of the scale is calculated ranging from 0 to 100. A very low total score indicates a poor perception of the state of health and a high score indicates the opposite.
In our study, we took into account the averaged overall scores for each quality of life measurement scale.

Results

Demographic characteristics

The mean age of our patients was 53.3 years with extremes of 33 and 70 years. Our study sample was over 50 years of age in 66%.
The majority of our study population was female with a sex ratio of 1.1.

Clinical characteristics

The main risk factor found in our study group was overweight, which accounted for 42%. Age as a risk marker was found in 33% of cases.
Heart disease underlying AF was found in 9 of our patients. In our study sample, 10 patients (42%) had no specific history.

Impact on Quality of life

On the AFEQT scale, before cardioversion, 33% of the patients in our study had a very important functional limitation.
The patients at the initial calculation of the SF 36 questionnaire score prior to cardioversion had an altered health status attributed to AF.
The mean score on the scale was 65.3 indicating a moderately poor perception of health in our patients.
It appears that the maintenance of sinus rhythm in our patients provided an improvement in quality of life, in contrast to the patients in whom a recurrence of arrhythmia was observed during the study. The absence of maintenance of sinus rhythm was observed in 4 patients.

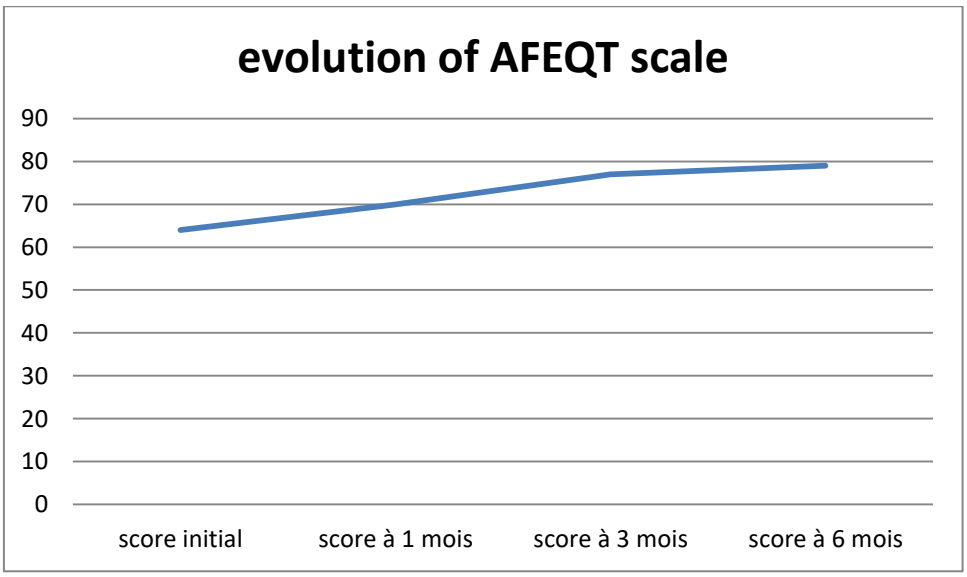

Figure 1: Evolution of QOL by AFEQT scale in patients who maintained sinus rhythm

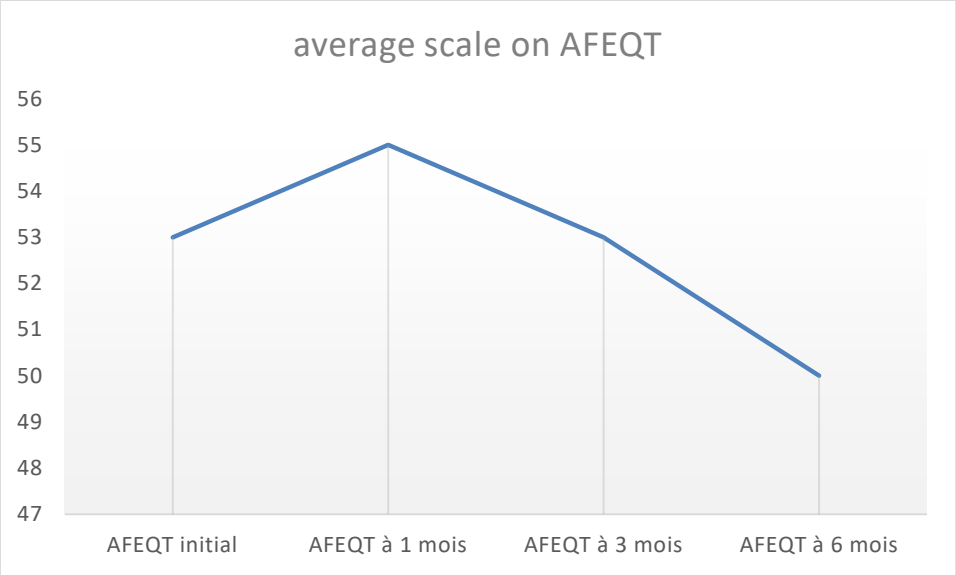

Figure 2 : Evolution of QOL by AFEQT in patients with recurrent AF.

The same findings were made in the assessment of the QOL by the SF-36 questionnaire.

Discussion

Screening for arrhythmia by identifying predisposing factors is therefore an essential element in the management of this condition. The prevalence of atrial fibrillation doubles after each decade beyond the age of 50 years as highlighted by the Framingham cohort data [5].

In our series, the majority of our patients were over 50 years of age with a representative percentage of 66%.

The implication of age as an independent risk factor has been described for many years in the literature. Apart from the Framingham cohort, other Australian and American series emphasise the relationship between advanced age and the occurrence of AF.

	Framingham[22] (N=5070)	Western Australia[23] (N=1770)			Rochester, Minn[24] (N=2122)			Cardiovascular Health Study[25] (N=5201)		
Age, y	All	Men	Women	All	Men	Women	All	Men	Women	All
35-39	...	...	...	...	0	0	0	...	...	...
40-44	0.1	...	...	...	0	0	0	...	...	...
45-49	0.1	...	...	...	0.5	0.5	0.5	...	...	...
50-54	0.5	...	...	...	0.5	0.5	0.5	...	...	...
55-59	0.5	...	...	...	1.0	1.5	1.2	...	...	...
60-64	1.8	1.1	2.3	1.7	1.0	1.5	1.2	...	...	...
65-69	1.8	3.3	2.7	3.0	6.0	3.0	4.6	5.9	2.8	4.0
70-74	4.8	8.6	5.5	7.0	6.0	3.0	4.6	5.8	5.9	5.8
75-79	4.8	15.0	8.4	11.6	16.1	12.2	13.7	5.8	5.9	5.8
≥80	8.8	15.0	8.4	11.6	16.1	12.2	13.7	8.0	6.7	7.3

Figure 3: Age distribution in the Framingham, Rochester cohort and the Cardiovascular Heart Study series

The most common risk factor found in our series (42%) was overweight (BMI>25Kg/m²), followed by age, hypertension and then diabetes.

Risk Factors	overweight	Age	hypertension	Diabete	smoking	Hypothyroidism
N	10	8	6	4	4	2
Percentage	42%	33%	25%	17%	17%	8,3%

Figure 4: Distribution of risk factors in our series

Some markers have been associated with the occurrence of AF apart from advanced age.

As pointed out in the series by Andrew D et al [6], among the 3983 subjects included in their cohort, the factors incriminated after adjustment for age in the occurrence of AF were mainly represented for non-cardiac causes by smoking, obesity and diabetes.

Dysthyroidism represented 3% in their series. In the multivariate analysis of non-cardiac conditions potentially associated with AF, only obesity emerged as a relevant factor with an estimated relative risk of 1.28.

Hypertension was reported in 53% of the same cohort and was not the most common cardiac etiology for arrhythmia in these patients.

Our results on the evolution of QOL after cardioversion are similar to those of Sandhus R et al who found that in the 100 patients included in their series who underwent ERC of their AF, the QOL score assessed by the AFEQT and the SF-36 improved significantly [7].

In the same series, patients who had a recurrence of their arrhythmia compared to patients who maintained sinus rhythm (n=51), the parameters for estimating QOL were impaired.

This supports the data from our study where in our patients who recurred after cardioversion the arythmia their quality of life scores were poor (figure 2). The patients in our series who did not maintain sinus rhythm were older and with systolic heart failure.

In the AFFIRM subsidiary study, which aimed to demonstrate the impact of returning to sinus rhythm on quality of life by comparing two groups (Group 1: patients in sinus rhythm, Group 2: patients in AF), no significant difference between the two groups was demonstrated on the improvement of quality of life items [8]. It should be noted that the 716 patients included in the study were elderly with a mean age of 70+ /- 9 years and had permanent AF.

In the series reported by Horduna et al, it was noted that the proportion of time spent in sinus rhythm the better is the quality of life [9].

Rhythm control alone as a management strategy for AF is also not associated with good quality of life, even if it is strict (HR<80 bpm at rest, HR during moderate exercise < 110 bpm), as highlighted in the series by Hessel et al [10].

In the study by Gronefeld et al. a favorable change in 5 of the 8 items assessed by the SF-36 scale was observed in patients who maintained sinus rhythm after cardioversion compared to the control group who received rate control only [11]. The control group in this study showed an improvement in 6 out of 8 items at 1 year follow-up.

They concluded that estimating QoL on subjective variables such as disease perception altered the assessment methodology [12, 13]. The conception of the disease would be linked to the patient's experience and beliefs [14]. It is in this sense that it is recommended to increase the number of quality of life scales in order to get as close as possible to the estimation of quality of life [14, 15].

There are other factors besides the usual risk factors for AF that also have an impact on patients' quality of life.

It appears that the choice of anticoagulant and antiarrhythmic drug may influence QOL.

In our study, patients on AOD had a better quality of life than patients on VKA by SF-36 score. In the series by Ynsaurriaga et al. an alteration in the quality of life of patients on anticoagulant therapy was demonstrated, although the study only included patients on VKA [16].

In the study by Benzimra et al, a significant difference in quality of life scores between the group of patients on VKAs and OADs was not observed [17]. This may be consistent with the data from our study.

In our study, almost half of the patients started flecaine after cardioversion, the same number were on cordorone for maintenance of sinus rhythm.

The initial quality of life scores for the flecaine patients were globally good compared to the averages of our cordarone subjects.

This is understandable, because the majority of the patients on flecainide were young and free of underlying heart disease.

Patients on Cordarone, on the other hand, had a poor quality of life on the assessment questionnaires. Indeed, these patients were older and mostly had advanced heart disease or systolic heart failure.

In the series by Tzeis et al. which enrolled 680 patients in 70 centres in Greece, the administration of flecaine to patients for rhythm maintenance showed an improvement in quality of life irrespective of the dosage of the molecule (100mg or 200mg) [18].

Although other antiarrhythmic drugs such as cordarone or calcium channel blockers have been used in some patients in the same series, a comparative study of their impact on quality of life parameters has not been performed.

In the study by Dorian et al. compared the effect on quality of life and symptoms of three antiarrhythmic drugs in patients followed for paroxysmal AF from the multicentre Canadian Trial of atrial fibrillation. These were cordarone, propafenone and sotalol [19].

The evaluation of quality of life by the SF-36 questionnaire concluded in this study an improvement of the items at 3 and 12 months without significant difference between the groups. It was also pointed out that beyond the 3rd month of follow-up the quality of life parameters did not show significant improvement except for those patients in whom a recurrence of arrhythmia was not observed [19].

The authors concluded that antiarrhythmic treatment contributes to the positive evolution of symptoms and quality of life for a limited period of time and that beyond that, it is the maintenance of sinus rhythm that guarantees the good progression of the patient's condition.

Conclusion

Atrial fibrillation remains a major public health problem because of its complications and its cost in terms of health care expenditure. Its management has evolved over the last few decades with an apparent emphasis on the lack of need for strict rhythm control measures.

Quality of life is impaired in patients with atrial fibrillation when compared to the general population. Our study aimed to demonstrate whether a return to sinus rhythm is associated with improved quality of life. Our results suggest that maintaining sinus rhythm was related to an increased quality of life.

In order to assess the real impact of returning to sinus rhythm it would be wise to consider a comparative study between long-term persistence of sinus rhythm and a heart rate control strategy in patients with permanent AF.

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