Depression, Anxiety, and Quality of Life in Patients With Atrial Fibrillation*

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Objective: **To examine the prevalence and persistence of depression and anxiety in patients with atrial fibrillation (AF), and their effect on future quality of life (QoL) status.**

Methods: **The Beck Depression Inventory and State-Trait Anxiety Inventory were completed by 101 patients with AF (62 men; mean age ± SD, 66.3 ± 11.0 years), who were compared to 97 patients with hypertension (as "disease control" subjects) in sinus rhythm (64 men; mean age, 68.0 ± 7.2 years) at baseline and at 6 months. QoL was ascertained at both time points using Dartmouth Care Cooperative Information Project charts.**

Results: **At baseline among AF patients, symptoms of depression, state anxiety, and trait anxiety prevailed in 38%, 28%, and 38%, respectively; analogous data for hypertensive patients were 30%, 23%, and 22%. AF patients displayed higher levels of trait anxiety ($p < 0.05$), with no significant differences in baseline depression, state anxiety, and QoL between patients with AF and disease control subjects. Symptoms of depression and anxiety (state and trait) persisted at 6 months in 36.8% and 33.3%, respectively. Symptoms of depression ($p < 0.001$) and anxiety ($p < 0.001$) at baseline, female gender ($p = 0.01$), ethnicity ($p = 0.01$), and employment status ($p = 0.03$) were significantly correlated with QoL at 6 months in the patients with AF. Multiple regression analysis revealed that baseline depression score provided the best independent prediction of 6-month QoL ($R^2 = 0.20$), although gender and employment status also entered the model.**

Conclusion: **Approximately one third of AF patients have elevated levels of depression and anxiety, which persist at 6 months. Symptoms of depression were the strongest independent predictor of future QoL in these patients.** ***(CHEST 2007; 132:1259–1264)***

Key words: anxiety; atrial fibrillation; depression; hypertension; quality of life

Abbreviations: AF = atrial fibrillation; BDI = Beck Depression Inventory; CI = confidence interval; COOP = Care Cooperative Information Project; SF-36 = Short Form-36; STAI = Stait-Trait Anxiety Inventory; OR = odds ratio; QoL = quality of life

Although the epidemiology, cost, clinical consequences, and efficacy of various treatment regimes for atrial fibrillation (AF) have been subject to considerable study,[1–3] less attention has been paid to patient-related issues, especially psychological morbidity and quality of life (QoL).

To date, no study has specifically examined the levels of depression and anxiety in patients with AF. However, patients with AF have significantly poorer QoL compared to healthy control subjects,[4–6] the general population,[7] and other coronary heart disease patients.[4] Our systematic review of the literature[8] demonstrated that many studies assessing QoL were compromised by methodologic weaknesses, including small sample size, not employing a control group, and use of nonvalidated tools to assess QoL. Also, many were performed on subgroups of clinical trial patients, resulting in biases, and may not have been adequately powered for such analyses.[8]

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The authors have no conflicts of interest to declare.

Manuscript received January 10, 2007; revision accepted June 2, 2007.

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DOI: 10.1378/chest.07-0036

We hypothesized that AF patients would report poorer QoL than a hypertensive "disease control" group in sinus rhythm. We further hypothesized that QoL in both patient groups would be predicted by depression and anxiety, and that these associations would be reliable across time and independent of demographic status. Finally, we examined the change in QoL across the 6 months of the study, as analogous changes in depression and anxiety would enable us to test the intimacy of the association between the affective disposition and QoL.

Materials and Methods

All consecutive patients with a diagnosis of AF attending our specialist AF cardiology clinic were eligible for inclusion (Table 1). Patients were excluded for the following: (1) age < 18 years; (2) previous nonpharmacologic intervention (excluding direct current cardioversion) to correct this arrhythmia; (3) malignancy of any type; (4) myocardial infarction, transient ischemic attack/stroke, coronary artery bypass graft surgery, or percutaneous transluminal coronary angioplasty within the previous 6 months; and (5) not able to read English. AF patients were age matched and sex matched with a disease control group in sinus rhythm (patients with essential hypertension [BP > 160/90 mm Hg untreated, or established on antihypertensive drugs]). Hypertensive patients in sinus rhythm were chosen as the disease control patients because hypertension is one of the most common comorbidities associated with AF, and we hope to determine whether AF *per se* is related to depression and anxiety.

During the study period, 195 AF and 160 hypertensive patients were approached to participate. Of these, 95 AF patients (48.7%) and 63 hypertensive patients (39.4%) refused to participate. Consequently, 101 of the AF patients and 97 of the hypertensive patients provided written informed consent, completed the baseline questionnaires, and constitute the effective study population. There were few differences between the AF and hypertensive patients who participated and those who declined, although nonparticipating AF patients (17.2%) and hypertensive patients (21.8%) were significantly more likely to be nonwhite ($p = 0.02$ and $p < 0.01$, respectively). No other significant differences in demographic and clinical characteristics between participating and nonparticipating AF patients were observed (data not shown).

Procedure

Social, demographic, and clinical details were recorded. Townsend deprivation scores were used as a measure of socio-

Table 1—*Demographic and Clinical Characteristics of the AF and Hypertensive Patients

Characteristics	AF Patients (n = 101)	Hypertensive Patients (n = 97)	p Value
Baseline demographic characteristics			
Mean (SD), age yr	66.3 (11.0)	68.0 (7.2)	0.23
Male gender	62 (61.4)	64 (66.0)	0.50
Ethnicity			
White	96 (95.0)	87 (89.7)	
Afro-Caribbean	3 (3.0)	9 (9.3)	0.24
South-Asian	2 (2.0)	1 (1.0)	
Occupational status	38 (37.6)	29.9 (29.9)	0.40
Mean (SD) deprivation score	4.37 (3.8)	4.74 (3.6)	0.58
Baseline clinical characteristics			
Significant comorbidity			
One	57 (56.4)	50 (51.5)	
Two or more	39 (38.6)	20 (20.6)	0.15
Hypertension	89 (88.1)	97 (100)	<0.01
Diabetes mellitus	11 (10.9)	47 (48.5)	<0.01
Myocardial infarction	6 (5.9)	11 (11.3)	0.27
Stroke	6 (5.9)	5 (5.2)	1.00
Transient ischemic attack	6 (5.9)	6 (6.2)	1.00
Current medication			
Warfarin	75 (74.3)	2 (2.1)	<0.001
Antiplatelet	22 (22.8)	42 (43.3)	0.001
Diuretic	41 (40.6)	51 (52.6)	0.16
Calcium channel blocker	49 (48.5)	39 (40.2)	0.24
β-Blocker	56 (55.4)	49 (50.5)	0.68
α-Blocker	7 (6.9)	53 (54.6)	<0.001
Angiotensin-converting enzyme inhibitor	32 (31.7)	42 (43.3)	0.12
Angiotensin II receptor blocker	24 (23.8)	13 (13.4)	0.05
Statin	30 (29.7)	57 (58.8)	<0.001

*Data are presented as No. (%) unless otherwise indicated. The presence of AF was defined as the absence of a P-wave in association with rapid oscillations or fibrillatory waves on an ECG. Recurrent AF patients included patients with paroxysmal and persistent AF. Paroxysmal AF was defined as patients with documented paroxysms of AF lasting ≥ 10 beats on 24-h Holter monitoring, while persistent AF was defined as patients where cardioversion to sinus rhythm was being considered. Permanent AF was defined as AF being present for ≥ 1 yr and cardioversion was considered inappropriate or was previously unsuccessful.