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Quality of Life in Patients with Atrial Fibrillation

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SIN ET AL.: Quality of Life in Patients with Atrial Fibrillation. Atrial fibrillation (AF) is one of the most common symptomatic cardiac arrhythmia and is associated with substantial complications and health care cost. Although AF is not an immediately life threatening disease, it is associated with significant symptoms, and thus impairment of quality of life (QoL). Therefore, one of the major assessments for treatment outcome in AF patients is improvement of QoL. Current available data do suggest that patients with AF have markedly impairment of QoL compared to healthy controls and patients with other cardiovascular diseases. In the majority of AF patients, rate or rhythm control appears to provide similar benefit on QoL. However, in highly symptomatic AF patients, successful nonpharmacological rhythm-control might yield the largest improvement in QoL. Future studies are required to compare QoL in different patient populations, different types of AF and different therapeutic approaches in patients with AF. Furthermore, the development and validation of a more disease-specific QoL instrument for AF can improve the measurement of health status in patients with AF. (J HK Coll Cardiol 2005;13:10-15)

Atrial fibrillation, quality of life

Introduction

Atrial fibrillation (AF) is one of the most common symptomatic cardiac arrhythmia and is associated with substantial complications and health care cost. Epidemiology studies have shown a prevalence of 0.5% to 1% for AF in the general population.1,2 The prevalence of AF increases with age with less than 1% in those under 60 years of age and greater than 6% in those aged 80 years or older.1 In Hong Kong, AF occurs in 1.3% of healthy adults aged >65 years.3 In United States, the median age of subjects with AF is 75 years, with 70% between the ages of 65 and 85 years.4 Furthermore, Framingham study have demonstrated that AF is more common in men and has a 1.5-fold greater risk of developing AF than women after adjustment for age and predisposing conditions.2

AF is frequently associated with the presence of underlying cardiovascular disorders. Prior studies in Hong Kong had shown that hypertension (29%),
arteriosclerotic cardiovascular disease (25%) and chronic rheumatic heart diseases (17%) accounted for over 70% of the patients admitted into hospital with AF. Furthermore, heart failure is closely associated with AF. In patients with heart failure, the prevalence of AF increases from <10% in those with New York Heart Association (NYHA) functional class I to approximately 50% in those with functional class IV. Lone AF describes situations in which no underlying or detectable causes for AF could be identified, and is reported to occur in 12-30% of patients with AF.

The total mortality rate, which is largely due to stroke, is approximately doubled in patients with AF compared with patients in normal sinus rhythm. In patients with rheumatic heart disease and AF, stroke risk was increased 17-fold compared to age-matched controls. The rate of ischemic stroke among patients with non-rheumatic AF averages 5% per year, which is 2 to 7 times the rate for people without AF. Furthermore, those patients with advancing age, prior stroke, hypertension, diabetes or congestive heart failure have a higher risk of stroke.

As discussed above, considerable studies have been performed to address the epidemiology and clinical consequences of AF. Therefore, studies on the efficacy of therapy in AF have been predominantly assessed by morbidity and mortality measures. Although AF is not an immediately life threatening disease, it is associated with significant symptoms. Patients with AF have symptoms that are highly likely attributable to the arrhythmia itself, rather than accompanying cardiovascular conditions. Therefore, one of the major purposes for treatment of patients with AF is to relieve symptoms and to improve quality of life (QoL). As a recent, more interest has been developed on the assessment of patient related issues, such as improvement of symptoms and QoL, as objectives in treating AF. This article reviews currently available data on the assessment of QoL in patients with AF.

### Definition of QoL

Since 1947, when the World Health Organization defined health as being not only the absence of disease and infirmity but also the presence of physical, mental, and social well-being, the issue of QoL has become steadily more important in health care practice and research. The World Health Organisation Quality of Life Group defined QoL as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad range of concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, and their relationships to salient features of their environment.

QoL is a multidimensional concept and no universal definition exists. Campbell et al notions of QoL encompass domains such as housing, employment, standard of living and marriage, etc. Economic, political, cultural, and spiritual factors may affect overall QoL, but are generally not considered to fall under the purview of physicians and health care systems. In the literature, the terms health-related QoL, QoL, health status and functional status are often used interchangeably. QoL is a broader concept while health-related QoL only includes aspects related to health only. Five health concepts are inherent in health-related QoL definition: physical health, mental health, social functioning, physical and general well-being. Health-related QoL can be conceptualised as the physical, psychological, and social domains of health which are influenced by a person's perceptions experiences, beliefs, expectations, and perceptions. The distinction between health status and QoL is that health status refers to the actual state of health but QoL measures the perceived impact of health on life. Health status can be assessed by objective as well as subjective methods but QoL is always subjective. Functional status refers to the physical, emotional and social consequences of the disease process. It often includes measures that assess performance of activities of daily living, such as walking, eating or interacting with family.

### Assessment of QoL in Patients with AF

Measurement of QoL is particularly relevant to the management of AF as the one of the major goal of
treatment is to relieve symptoms and improve QoL in this chronic condition. There are several purposes to evaluate QoL in patients with AF: 1) to select patients for various treatment; 2) to determine the choice of treatment; 3) to monitor patients progress; 4) to assess the impact of complications; and 5) to use as an outcome measure in research studies and clinical trials.

The instruments available to measure QoL can be divided into either 1) generic instruments or 2) disease-specific instruments. Generic instruments are usually broader measures of health status. They are used in the general population to assess a wide range of domains and can be applied to a variety of health states, conditions, and diseases. They are usually not specific to any particular disease and therefore are useful for making comparisons between disease states. The Medical Outcomes Study Short Form Health Survey (SF-36) is currently the most widely validated generic instrument. A generic instrument is often used in combination with a disease-specific instrument which is more sensitive to detect symptoms-related changes. Disease-specific instruments focus on the domains most relevant to the disease or condition under study and on the characteristics of patients in whom the conditions is most prevalent. The Symptom Checklist: Frequency and Severity (SCL) is a disease-specific instrument developed for patients with cardiac arrhythmias. However, there is no disease specific QoL for patients with AF.

**The Medical Outcomes Study Short Form Health Survey (SF-36)**

The SF-36 is a widely validated generic measure that has been used in estimating disease burden, such as in conditions of arthritis, back pain, cancer, and cardiovascular disease. It is useful for making comparison with the general population. SF-36 is a generic health scale with eight subscales of health dimensions: physical function, role limitations due to physical problems (role-physical), bodily pain, general health, vitality, social functioning, role limitations due to emotional problems (role-emotional), and mental health. The scores in each of the eight subscales are standardized from 0 to 100, and a higher scale scores indicates better QoL. The SF-36 is commonly used because there is a lot of evidence to support its conceptual base, validity, reliability, psychometric properties, sensitivity and responsiveness in many different populations and patient groups. Internal consistency reliability coefficients (Cronbach' alpha) on all scales of the SF-36 exceed alpha of 0.8, except for social functioning with alpha of 0.76. The use of the SF-36 survey was validated across 24 diverse patient groups and reported reliability coefficients with a range of 0.65 to 0.94 across. The Chinese (HK) version of the SF-36 health survey was the only health-related QoL measure that has been both validated and normed on Chinese adults in Hong Kong.

**Symptom Checklist: Frequency and Severity (SCL)**

The symptom checklist: frequency and severity was specifically developed for patients with cardiac arrhythmias. The checklist comprises 16 items that are specific for arrhythmias, such as palpitations, dyspnoea, dizziness, exercise intolerance, chest discomfort and syncope, etc. Both the frequency and severity of symptoms related to the arrhythmias are quantified. Frequency is quantified from 0-4: "0" for "Never", "1" for "Rarely", "2" for "Sometimes", "3" for "Often" and "4" for "Always". Severity is quantified from 0-3: "1" for "Mild", "2" for "Moderate" and "3" for "Extreme". The range of possible scores is 0-64 for frequency and 0-48 for severity. Higher scores reflect more symptomatic individuals.

The SCL is a disease-specific measure. Disease-specific measures can be more responsive to changes in patients' health because they highlight more relevant manifestations of the illness and tailor their response categories to a more relevant range of function than generic measures. Berkowitsch et al investigated the effects of catheter ablation on QoL in 60 patients with AF, and analysed the dynamics of SCL and SF-36 parameters. The results of this study showed that SCL is a more specific instrument for a measurement of the procedure success or failure than SF-36.
QoL in Patients with AF

Table 1 summarised the clinical studies on QoL in patients with AF. In these studies, both patients with paroxysmal and chronic AF were included. Four studies have compared the QoL in AF patients with a control group or the general population. The results of these studies have consistently demonstrated that patients with paroxysmal and chronic AF, silent AF and newly diagnosed AF have significantly poorer QoL than control or general population as determined by SF-36. Furthermore, AF patients had significantly impairment of QoL as compared to patients with coronary artery disease and similar to patients with heart failure.

Among patients with AF, female patients reported significantly poorer physical and functional health compared to male patients. In the AFFIRM Study, baseline SF-36 scores and total QoL index scores were also lower in women and patients older than 65 years old. Furthermore, patients with paroxysmal AF who reported frequency arrhythmia recurrence had more impairment of QoL compared to patients with persistent and permanent AF. In patients with persistent and permanent AF, their clinical courses

<table>
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<td>Dorian, et al, 2000</td>
<td>152 paroxysmal AF patients (52±12) vs. 47 controls (54±14) vs. 69 patients with coronary artery diseases</td>
<td>Paroxysmal AF</td>
<td>Assess the impact of paroxysmal PAF on QoL vs. control and patients with other cardiovascular disease</td>
<td>SF-36, SCL, Specific activity, Illness intrusiveness, University of Toronto AF severity Scales</td>
<td>- Patients with paroxysmal AF reported significantly impaired QoL compared to control and patients with percutaneous coronary intervention, but was similar to patients with heart failure or postinfarction.</td>
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| van den Berg, et al, 2001     | 73 paroxysmal AF (54±13) vs. 180 age- and sex-matched controls | Paroxysmal AF | To assess the impact of AF on QoL, and to determine the predictors of QoL in AF patients | SF-36 | - AF patients had impaired QoL in all SF-36 subscales except the pain subscale.  
- Symptoms and autonomic function were important predictors of QoL. |
| Savelieva, et al, 2001        | 154 AF patients (58±12) vs. 49 controls | Chronic AF-40% Paroxysmal AF-60% | QoL in symptomatic AF patients were compared with silent AF patients and controls | SF-36, SCL, Modified Goldman specific activity scale, illness intrusive ratings | - Impaired QoL in all AF patients compared to control group.  
- In patients with silent AF, most SF-36 scale scores did not differ much with normal subjects, but the perception of general health and the rating of global life satisfaction was poorer. |
| Kang, et al, 2004             | 81 patients with AF <3 months (mean age: 67) | Newly diagnosed AF | Compared QoL in patients newly diagnosed with AF vs. general US population | SF-36, SCL | - Impaired QoL in patients with newly diagnosed with AF vs. general population.  
- Frequency and severity of symptoms inversely related to QoL. |
| Paquette, et al, 2000         | 170 AF patients: 62 female (68±9) vs. 108 male (62±1) | Chronic and paroxysmal AF | Compared QoL in male vs. female AF patients | SF-36, SCL, Duke Activity Status Index, University of Toronto Atrial Fibrillation Severity Scale | - Female AF patients had more QoL impairment than male AF patients. |
are more predictable with stable ventricular rate, and have less impairment in QoL than patients with paroxysmal AF. However, in patients with paroxysmal AF, the severity and frequency of AF episodes were not predictive of QoL.

Effect of Therapeutic Intervention on QoL in Patients with AF

In regard to the treatment of AF, successful restoration and maintenance of sinus rhythm are conceptually expected to improve QoL, reduce the morbidity and mortality. However, recent randomized trials have failed to show any superiority of rhythm control strategy, primarily pharmacological over rate control plus anticoagulation strategy in term of quality of life, stroke and mortality. In 716 patients included in the AFFIRM QoL substudy, there were no significant difference in QoL score between patients assigned to rate- and rhythm-control at all time points. Furthermore, QoL scores improved in both group with treatment, and were similar whether the actual rhythm was sinus or AF.

The equivalent status of the two therapeutic strategies may not be applicable to all patients with AF. In these studies, the majority of patients were elderly with relatively mild symptoms, had multiple risk factors for stroke, but with only a small proportion with severe heart failure. Attempts to improve QoL by restoring sinus rhythm in these AF patients might not be successful. There are different subsets of patients, both young and old, who are candidates for maintenance of sinus rhythm, and may benefit from nonpharmacological approaches including catheter ablation, permanent cardiac pacing and surgical procedure alone or in combination, in the prevention of AF. In highly symptomatic AF patients, these current available literatures do suggest that these nonpharmacological provide the largest improvement in QoL. However, the majority of studies on the effect of nonpharmacological therapies on QoL in AF patients are limited by small sample size, uncontrolled studies without a control group on medical therapy alone, relatively short duration of follow-up and use of non-validated QoL instruments.

Conclusion

Assessment of QoL has become an important clinical outcome measures in management of patients with AF. Current available data do suggest that patients with AF have markedly impairment of QoL compared to healthy controls and patients with other cardiovascular diseases. In the majority of AF patients, rate or rhythm control appears to provide similar benefit on QoL. However, in highly symptomatic AF patients, successful nonpharmacological rhythm-control might yield the largest improvement in QoL. Future studies are required to compare QoL in different patient populations, different types of AF and different therapeutic approaches in patients with AF. Furthermore, the development and validation of a more disease-specific QoL instrument for AF can improve the measurement of health status in patients with AF.

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