How important is the assessment of quality of life after pulmonary vein isolation for paroxysmal atrial fibrillation?

**Key Words:** Quality of life, paroxysmal atrial fibrillation, pulmonary vein isolation, ablation

Atrial fibrillation (AF) is one of the most common symptomatic arrhythmias. In addition to clinical symptoms, patients with AF have an increased risk of stroke and it can cause decrease in exercise tolerance and left ventricular function. The growing interest in the quality of life in patients with AF is related to recent clinical findings, such as patients with symptomatic paroxysmal AF having markedly impaired quality of life compared with a healthy index population. Patients with symptomatic AF, today often, undergo atrioventricular node ablation with permanent pacemaker implantation, primarily not to improve their survival but their daily life performance. Although quality of life is now accepted as a clinically important issue in patients with AF, the currently available data from adequately designed studies are still very limited. Therefore, it is very important to conduct more studies in a prospective and randomized fashion to assess the quality of life in patients with AF who undergo different treatment strategies.

**Quality of life after catheter ablation procedures**

Atrioventricular node ablation with permanent pacemaker implantation, atrioventricular node modification procedures, and Maze-related catheter procedure were reported to improve quality of life in highly selected and severely symptomatic AF patients\(^1\). Recently, pulmonary veins (PVs) have been demonstrated to be the major source of ectopic beats initiating paroxysmal AF, and radiofrequency catheter ablation of PVs can successfully cure paroxysmal AF\(^4,5\). However, the information about quality of life after PV ablation in symptomatic AF patients has been very limited. Although Gerstenfeld *et al.* have reported that focal ablation of PV triggers resulted in significant improvement in quality of life and symptoms in patients with paroxysmal AF, the PV isolation technique has replaced the focal ablation procedure because focal ablation is associated with a higher incidence of recurrent AF and PV stenosis\(^6-8\).

In this issue of Europace, Berkowitsch *et al.* approach an important topic; this work is original because there is very limited information on quality of life in patients following PV isolation for paroxysmal AF\(^9-12\).

**Improvement of quality of life — facts and controversies**

The study by Berkowitsch *et al.* details the quality-of-life outcomes in a series of patients undergoing PV isolation for paroxysmal AF, with respect to the relative value of two different questionnaires to measure quality of life, the medical outcomes study short form health survey (SF36) questionnaire, and the disease-specific arrhythmia-related symptom severity checklist (SSCL)\(^9\). The instruments of SF36 and SSCL have been shown to be responsive to a number of medical and psychiatric problems. They have also been used and validated in patients with a diverse spectrum of cardiac disease. Since the instruments of SF36 and SSCL are validated and generally applied in patients with paroxysmal AF, the data reported by Berkowitsch *et al.* about quality-of-life outcomes in patients with paroxysmal AF undergoing PV isolation are useful and valuable.

The improvement in quality of life found by Berkowitsch *et al.* in patients who were ablated but with AF recurrence may reflect modification of the underlying arrhythmogenic process or may stem from placebo effect. This finding would suggest that energy delivery, even when inadequate to eliminate AF, might alter the connections between PV and left...
atrium and cause cardiac denervation, or some undetermined elements, and thus modify AF frequency, duration or severity.

Further studies may clarify the following issues: (1) whether patients with AF recurrence have any different clinical characteristics from those without AF recurrence; (2) whether the patients with AF recurrence are taking different antiarrhythmic drugs from those without recurrence; (3) whether the improvement in quality of life may have been in part the result of changing previously symptomatic events into asymptomatic ones; (4) whether the timing (early vs. late) and frequency (seldom vs. frequent) of AF recurrence have important effects on quality of life. The improvement of quality of life found in patients with AF recurrence also highlights the challenge of determining a successful endpoint for AF ablation. Does success mean the complete absence of arrhythmia, rhythm control with previously ineffective medications, or symptom improvement? These questions will be asked again as new ablation techniques are advocated for the treatment of AF. Although some doctors will define success as freedom from AF without any antiarrhythmic drugs, the limitations of available therapies often make less absolute endpoints clinically acceptable.

Several important issues in the study by Berkowitsch et al. need further discussion. First, since all the data have been derived from a tertiary care referral centre, there is concern over potential selection bias. The study group was both very symptomatic and highly selected; therefore, the results are not applicable to a less symptomatic patient population. Second, the total patient number was very small; this could explain why no significant differences in SF36 scales between the patients with and without recurrence of AF were found. Third, a control group of patients with similar arrhythmias treated without catheter ablation was not studied. Nevertheless, because the quality-of-life measurements were obtained before and after PV isolation, each patient served as his or her own control. It is probable that patients undergoing a prolonged invasive procedure would have some quality-of-life benefit from the procedure unrelated to the presence or absence of AF. Fourth, the antiarrhythmic drug therapy history as well as the antiarrhythmic drug taken before and after PV isolation would also be important information. It is additionally important to establish what effects the commonly used antiarrhythmic drugs have on the quality of life. Furthermore, the marked improvement in measurements of quality of life may have been related to withdrawal of medications as well as to elimination of AF. Fifth, specific numerical data on the SF36 and SSCL should be clarified. With respect to the symptom checklist, more detailed presentation, and whether both symptom frequency and severity improved, would be very useful. Sixth, although this manuscript concluded that the SSCL is more specific than the SF36 as a quality-of-life measurement in patients with paroxysmal AF after PV isolation, the information on both generic and disease-specific aspects of quality of life is valuable and it is not suitable for the authors to compare these questionnaires directly to each other with respect to 'efficiency'. These different questionnaires are not 'competitive'; they are expected to be complementary. Although these limitations were found in the study by Berkowitsch et al., the original message remains very useful and remarkable.

Conclusions

Reduction in symptoms with an improvement in quality of life is one of the most important reasons for treating patients with paroxysmal AF. Documentation of the salutary effects of any interventional therapy on quality of life will provide the important information for evidence-based medicine. In the era of interventional electrophysiology, quality of life has become an important and more popular measure in AF clinical trials, with the more traditional outcomes of mortality, morbidity, and laboratory findings. Although the very long-term efficacy, risk for PV stenosis, impact on thromboembolic risk, and the effects on non-PV AF and chronic AF after PV isolation are not well known, the data presented by Berkowitsch et al. regarding the improvement in quality of life after PV isolation justify optimism.

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References


