Journal of the American College of Cardiology
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Published by Elsevier Inc.

Vol. 58, No. 5, 2011
ISSN 0735-1097/$36.00
doi:10.1016/j.jacc.2011.03.034

Real-Life Observations of Clinical Outcomes With Rhythm- and Rate-Control Therapies for Atrial Fibrillation

RECORDAF (Registry on Cardiac Rhythm Disorders Assessing the Control of Atrial Fibrillation)

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Objectives RECORDAF is the first worldwide, prospective, observational survey of management of atrial fibrillation (AF) in unselected, community-based patients.

Background Primary outcomes were therapeutic success and clinical outcomes associated with rhythm-control and rate-control strategies.

Methods Patients with recent-onset AF were included (n = 5,604). Treatment strategy (rhythm control or rate control) was noted at baseline. Follow-up was 12 months. Therapeutic success required that strategy was unchanged without clinical events. Further maintenance of sinus rhythm was required in the rhythm-control group, and heart rate ≤80 beats/min in the rate-control group.

Results Data from 5,171 patients were assessable. Therapeutic success was 54% overall (rhythm control 60% vs. rate control 47%), a result driven by control of AF: rhythm control, 81% vs. rate control, 74%. After adjustment for propensity score quintiles, the rhythm-control strategy was significantly related to superior therapeutic success (odds ratio: 1.34, 95% confidence interval: 1.15 to 1.55; p = 0.0002). Clinical events occurred in 18% of patients. The arrhythmia management strategy was not predictive of clinical events. The type (persistent), presence at baseline visit, and duration (>3 months) of AF, together with age older than 75 years and the presence of heart failure, predicted progression to permanent AF. The choice of rhythm control reduced the likelihood of AF progression (odds ratio: 0.20, 95% confidence interval: 0.17 to 0.25; p < 0.0001).

Conclusions Clinical outcomes in AF patients were driven mainly by hospitalizations for arrhythmia/proarrhythmia and other cardiovascular causes, but not by the choice of rate or rhythm strategy. Rhythm-control patients progressed less rapidly to permanent AF. (J Am Coll Cardiol 2011;58:493–501) © 2011 by the American College of Cardiology Foundation

In addition to appropriate antithrombotic treatment, 2 broad strategies are used to manage recurrent episodes of atrial fibrillation (AF): rhythm control, which implies the restoration and maintenance of sinus rhythm, and rate

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Manuscript received July 29, 2010; revised manuscript received February 1, 2011, accepted March 1, 2011.

JACC Vol. 58, No. 5, 2011
July 26, 2011:493–501

Abbreviations and Acronyms

AF = atrial fibrillation
CAD = coronary artery disease
CI = confidence interval
ECG = electrocardiogram
MI = myocardial infarction
OR = odds ratio
TIA = transient ischemic attack

control, which involves keeping the ventricular rate at a physiological level while allowing the atria to continue to fibrillate. However, contrary to expectation, accumulated trial data indicated that for the patient populations and specific therapies evaluated, a rhythm-control strategy was not superior to a rate-control strategy with regard to various major cardiovascular endpoints (1–3).

Because enrollment is limited to patients who can be randomized to either study arm and physicians must condone and support the allocated treatment for the duration of the study, clinical trials do not always reflect usual clinical practice. In addition, trials exploring the value of a treatment strategy are critically dependent for their interpretation on the ability of the strategy to achieve its intermediate goal, in this instance, maintenance of sinus rhythm or persistence of adequate rate control. Some have criticized the rate-versus-rhythm trials for such failures (4).

Although not protected by randomization, registry data may provide complementary information to resolve further the choice of treatment strategy. The RECORDAF (Registry on Cardiac Rhythm Disorders Assessing the Control of Atrial Fibrillation) was established to investigate "real-world" treatment of patients assigned, on clinical grounds, to a rate-control or rhythm-control strategy. The RECORDAF is the first worldwide, 1-year observational, longitudinal study of the treatment of patients with recently diagnosed paroxysmal or persistent AF.

Methods

The primary objectives of the RECORDAF were to prospectively assess therapeutic success and clinical outcomes with rhythm- and rate-control strategies. Physicians were randomly selected from an exhaustive global list of office- or hospital-based (university/nonuniversity, private/clinic) cardiologists. Consecutive patients age 18 years and older were considered for enrollment if they presented with AF or a history of AF (≤1 year from diagnosis, irrespective of whether AF was treated and of the rhythm at inclusion) received a diagnosis based on a standard electrocardiogram (ECG) or Holter monitoring and were eligible for pharmacological treatment of AF by rhythm- or rate-control agents. Exclusion criteria included permanent AF or a transient/reversible cause of AF. All patients signed an informed consent form. Data were collected at baseline (visit 0), 6 ± 2 months (visit 1: nonmandatory), and 12 ± 3 months (visit 2).

Management of AF was considered a therapeutic success if the following conditions were met: 1) for the rhythm-control strategy, AF was said to be controlled if the patient was in sinus rhythm on the ECG at the 12-month visit; 2) for the rate-control strategy, the patient had a resting heart rate of ≤80 beats/min on the ECG at the 12-month visit. Therapeutic success also required that no crossover between strategies had been made and no clinical outcome had occurred between the baseline and 12-month visits.

Multiple clinical outcomes were measured to evaluate in detail the impact of cardiovascular risk factors (including the control of AF). Hence, the occurrence of at least 1 of the following events was counted between baseline and 12 months: cardiovascular death; stroke, or transient ischemic attack (TIA) leading to hospitalization; myocardial infarction (MI); hospitalization for arrhythmic/proarrhythmic events, hospitalization for complications of ablation procedures, but not the actual procedures; and other cardiovascular events (congestive heart failure, unstable angina, peripheral ischemic events, percutaneous coronary intervention, coronary artery bypass graft, valvular surgery, carotid angioplasty, carotid endarterectomy, other cardiac or vascular surgery). Cardiovascular death reported until the end of the 15th month after baseline was counted as a clinical outcome in the 12-month analysis.

To estimate a success rate of approximately 50% at 1 year with 5% precision and 95% confidence intervals (CIs), 384 assessable patients per region/country were needed. With an expected lost-to-follow-up rate of 25%, approximately 6,100 patients were to be included to provide 4,600 assessable patients. Primary endpoints were therapeutic success and the presence of clinical outcome events. Secondary endpoints were assessment of AF control, proportion of patients in sinus rhythm, treatment modalities, and adverse reactions to AF treatments.

Statistical methods. Descriptive information is summarized as mean ± SD and the number of nonmissing data for quantitative data. Categorical data are summarized as number and percentage of the population with nonmissing data. Baseline characteristics were compared between groups using a chi-square test (categorical variables), analysis of variance, and a Wilcoxon test (continuous variables). Data collection and statistical analyses were performed by an external contract research organization, Lincoln Pharmaceuticals Ltd. (Gujarat, India).

To identify factors associated with clinical outcomes and therapeutic success, univariate analyses were performed, with subgroup comparisons made by chi-square tests; multivariable stepwise logistic regressions were also performed on clinical outcomes, therapeutic success, and progression to permanent AF at 1 year, with a p value of 0.05 required for entering and retaining the variable in the model. Discrimination between models was assessed using c-statistics, and calibration was assessed using Hosmer-Lemeshow chi-square statistics. Odds ratios (ORs) and associated 95% CIs for therapeutic success, for having a clinical outcome, or for progression into permanent AF were determined. Multivariable analyses were adjusted for country.