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Rate versus rhythm control in patients with atrial fibrillation and normal to mild left atrial enlargement: insights from the AFFIRM trial

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Background: Atrial fibrillation is the most commonly encountered sustained arrhythmia and is associated with significant morbidity and mortality. Several trials have demonstrated that no mortality benefit exists when choosing a rhythm-control strategy over a rate-control strategy, with some trials suggesting an increase in mortality. Using the AFFIRM trial database we sought to determine the effect of rhythm control strategy in patients with less atrial remodeling.
Methods: AFFIRM Trial data was used to evaluate the effect of rhythm control in a subgroup of patients with normal to mild left atrial enlargement. A chi-square test and a t-test were used to examine and compare the binary and continuous variables of baseline characteristics and outcomes between rhythm control and rate control.
Results: We identified a subgroup of subjects from the AFFIRM trial with normal to mild left atrial enlargement (n=2022 of 4060 total subjects). Subjects were randomly assigned to the rhythm-control group (n=1022) or the rate-control group (n=1000). The mean age and BMI of subjects were 70±8 years and 28±6 kg/m^2, and the total number of women was 910 (45%). The percentage of subjects who have a history of hypertension, diabetes, and coronary artery disease was 70%, 19%, and 34%, respectively. Those subjects had a mean ejection fraction of 57±7%. Subjects in the rhythm-control group had an increased risk of death (RR 1.34, 95% CI 1.08–1.67; P=0.007) and hospitalization/ED visits (RR 1.10, 95% CI 1.05–2.16; P≤0.001). In this group, the risks of overall death and hospitalization/ED visits were higher among patients who received amiodarone compared to patients who did not.
Conclusion: This study demonstrated an increased risk of mortality and hospitalization in patients with normal to mild atrial enlargement randomized to a rhythm-control strategy. These findings were driven by amiodarone use in this group.

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Slope of heart rate versus work load as a prognostic predictor in male patients with atrial fibrillation

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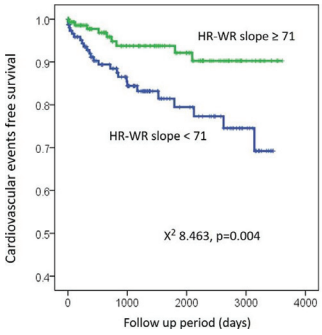
Background: We previously reported that peak exercise-heart rate (HR) is related to exercise capacity and prognosis in patients with atrial fibrillation (AF). The aim of the study was to investigate the clinical characteristics and prognostic value of the slope of HR versus work load (HR-WR slope) as a parameter for chronotropic ability.
Methods: We analyzed 341 male patients with AF from our observational cohort who performed symptom-limited maximal cardiopulmonary exercise testing. Divided them into two groups by median value of HR-WR slope, we compared the clinical characteristics and the prognosis. The endpoint was set as cardiovascular (CV) events; cardiovascular death, hospitalization for heart failure (HF), acute coronary syndrome and cerebral infarction (CI).
Results: HR-WR relationship was linear and HR-WR slope was calculated as the slope of linear regression line between HR and WR during exercise. HR-WR slope was normally distributed and positively associated with % predicted peak VO2. Organic heart disease was more prevalent in the lower HR-WR slope. During the median follow up period of 3 years, the CV events were observed in 35 patients; 7 CV death, 21 HF hospitalization, 1 ACS and 6 CI. The incidence of CV events was negatively associated with HR-WR slope. Kaplan-Meier curve showed that the binary HR-WR slope well discriminated the risk (Figure). Multivariate Cox regression analysis showed the strong relation of binary HR-WR slope to the endpoint independently of age, HR lowering drugs and the presence of organic heart disease.



Kaplan-Meier curve for CV events

Conclusions: HR-WR slope would be a feasible prognostic predictor in AF even when maximal exercise test is not applied.

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Paroxysmal/persistent atrial fibrillation and/or atrial flutter is an independent predictor for all-cause mortality in hemodialysis patients

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Background: In the clinical settings, atrial fibrillation (AF) and atrial flutter (AFL) are common in patients on hemodialysis (HD). However, limited data on the prevalence of AF have been reported in Japanese HD population. Also, prognosis in HD patients with AF has not been well known in Japan. We investigated the prevalence of AF/AFL in hemodialysis population, and their prognosis.
Methods: We collected Holter ECG in our medical institute from 2006 to 2015 (in total 15538 cases) and investigated the prevalence of AF/AFL. Furthermore, we collected 1377 HD patients underwent 24-hour ambulatory Holter electrocardiography (ECG) in 2012. In addition, they were observationally followed–up for up to 5 years.
Results: The average prevalence of AF and AFL was 8.5% from 2006 to 2015. Persistent, paroxysmal AF and Atrial Flutter were recorded in 103 (7.48%) cases during Holter ECG in 2012, they were classified into AF group. Patients in AF group were older (72.5±9.37 vs. 66.9±11.9, p<0.001) and had longer dialysis period (8.31±8.90 vs. 6.61±6.63, p=0.03), compared to control group. Kaplan-Meier analysis for 5-year follow-up period shows that prognosis in patients in AF group had significantly higher events rate than the control group (43.7% vs 23.1%, p<0.001). Univariate analysis for all-cause death shows age [hazard ratio (HR) 1.06, 95% confidence interval (CI) 1.05–1.07, p<0.001], diabetes (HR1.27, 95% CI1.03–1.57, p=0.026), dyslipidemia (HR0.74, 95% CI 0.54–0.99, p=0.048), and AF (HR2.03, 95% CI 1.47–2.75, p<0.001) were prognostic factors. Multiple Cox regression analysis shows age (HR1.06, 95% CI1.04–1.07, P<0.001), diabetes (HR1.48, 95% CI 1.18–1.85, p<0.001), dyslipidemia (HR 0.69, 95% CI 0.50–0.92, p=0.012), and AF (HR1.48, 95% CI 1.04–2.06, p=0.029) were independent risk factors for all-cause death.
Conclusion: In the study, the average prevalence of AF, pAF and/or AFL in patients on HD was 8.5%. AF was an independent risk factor for all-cause death in such population.

ATRIAL FIBRILLATION – ABLATION

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Personalized ablation strategy in patients with long-standing persistent atrial fibrillation and chronic heart failure

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Background: Emerging evidence suggests that left atrial (LA) electroanatomic substrate (EAS) outside the pulmonary veins (PV) plays a crucial role in the maintenance of persistent atrial fibrillation (PsAF). Whether personalized LA EAS modification in addition to circular pulmonary vein isolation (PVI) improves the long-term procedure outcome and heart function in patients with long-standing persistent atrial fibrillation (PAF) and chronic heart failure (CHF) with left ventricular (LV) systolic dysfunction (SD) still remains unknown.
Method: We prospectively analyzed electroanatomical high density bipolar maps (HDBM) in 125 subjects with long-persistent AF and chronic HF (group I with LVEF <45%, n=43 and group II with LVEF ≥45%, n=82), who underwent circular PVI. Bipolar signals ≤0.75mV outside PV, associated with local conduction velocity delay were tagged on LA maps, considered as EAS and measured. Patients in groups I and II were further divided according to whether LA EAS modification to addition to circular PVI was performed (group IA, n=22; group IIA, n=36) or not

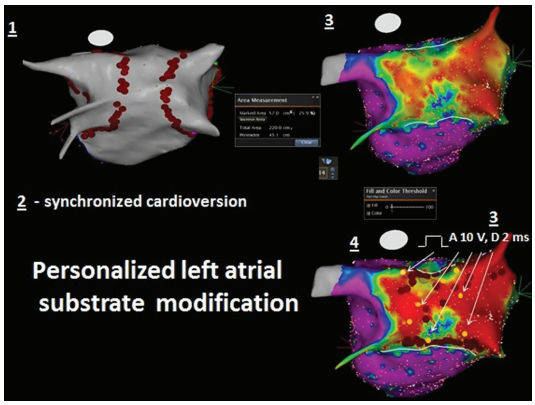

Figure 1