Atrial fibrillation is associated with increased risk of fatal and non-fatal cardiovascular events in patients with heart failure and preserved ejection fraction: findings from the I-PRESERVE trial

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Background: Atrial fibrillation (AF, documented by ECG) is present in about 15% of patients with heart failure and a reduced LV ejection fraction (HF-REF) and is an independent predictor of cardiovascular (CV) events. The prevalence of AF in patients with HF and preserved EF (HF-PEF) and whether it is an independent predictor of CV outcomes in HF-PEF has not been defined.

Methods: The Irbesartan in Heart Failure with Preserved Systolic Function Trial (I-PRESERVE) randomized 4128 patients with an EF≥45% to receive irbesartan or placebo. The prevalence of AF was established by ECG at randomization. The “primary” outcome (475 events/3796 patients) of all-cause mortality or CV hospitalization (myocardial infarction, stroke, worsening heart failure, atrial or ventricular arrhythmia, unstable angina) and a “secondary” outcome (294 events/3796 patients) of HF mortality and HF hospitalizations was compared over one year of follow-up between patients with and without AF. The independent predictive role of AF was examined in a multivariable model (including symptoms, clinical history, CV examination, biochemistry, hematology).

Results: In I-PRESERVE, 16% of patients had AF by ECG at randomization. Patients with AF, compared to patients without AF, were older (74±0.3 vs 71±0.1 yrs, mean±SD), less often female (54% vs 62%), had lower EF (58±0.4% vs 60±2%), lower eGFR (68±0.8 vs 73±0.4%), higher incidence of previous HF hospitalization (61% vs 41%), less frequent history of hypertension and MI (84 & 17% vs 89 & 25%), lower EF (58±0.3 mmHg), higher heart rate (76±0.5 vs 71±0.2 BPM, all p<0.05). The primary and secondary outcomes occurred in 19 & 15% of patients with AF and 12 & 6% of patients without AF at 1 year. In a multivariate analysis AF remained a significant predictor of increased risk of the primary (Hazard Ratio, HR 1.33[95% CI 1.07, 1.65]) and secondary (HR 1.81 [95 CI1.40, 2.33]) outcomes.

Conclusions: At randomization to I-PRESERVE, the prevalence of AF by ECG in HF-PEF patients was similar to patients with HF-REF in previous studies. HF-PEF patients with AF had a significantly worse outcome than those without AF and this increased risk of fatal and non-fatal CV events was independent of other factors associated with a worse prognosis.

Burden of asymptomatic episodes of atrial fibrillation in a heart failure cohort

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Heart failure is associated with an increased risk of developing atrial fibrillation (AF). The prevalence of AF in heart failure patients is 20-50% compared to a prevalence of ~1% in the general population. Prevalence studies rely on detecting AF by standard ECG which fails to detect asymptomatic episodes of AF that often occur during AF development. In patients with heart failure AF is associated with increased risk of stroke, all cause mortality and hospitalisation, hence the importance of identifying these at risk patients.

We examined the occurrence of AF in 162 heart failure patients with cardiac resynchronization therapy (CRT) devices. AF episodes were defined as a period of mode-switching on the CRT devices with atrial rate >200 for over 30s. Patient records were reviewed to establish which patients were known to have chronic or paroxysmal AF. Of the 162 patients, 43 had chronic AF (26.5%), 18 paroxysmal AF (11.1%), and 101 (62.3%) had no previous history of AF and were in sinus rhythm at their last clinic appointment. Of the 101 patients not known to have AF, 27 had significant episodes of AF (26.7%, Fig. 1A) with mean AF burden of 1.6±0.9% and longest duration of 5.6±2.3 hours (Fig 1B). The mean AF burden (30.6±8.8%, p<0.01) and longest duration (653±355 hours, p<0.05) were significantly larger in patients with known paroxysmal AF as were the rates of anticoagulation rates (83.3% vs. 13.5% respectively, p<0.01).

A significant number of patients with heart failure suffer from asymptomatic undiagnosed episodes AF and are often not anticoagulated. Compared to patients with known AF patients with undiagnosed AF have less AF burden. Further studies are warranted to assess the true burden of atrial fibrillation and the need for formal anticoagulation in these "at risk" heart failure patients

Heart failure and atrial fibrillation. Prognosis with beta blocker and digoxin alone or in combination

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Introduction: In patients with atrial fibrillation (AF) and heart failure (HF), both digoxin and beta-blockers reduce the ventricular rate and may improve symptoms, but only beta-blockers have been shown to improve prognosis. Whether digoxin significantly affect prognosis in this setting is poorly known.

Methods: Patients seen in the cardiology department in our institution (academic hospital, tertiary referral center) with both HF and AF between January 2000 and January 2004 were retrospectively identified and prospectively followed until September 2007. The patients were identified by a search in the hospital discharge records which include information on type of AF, primary diagnoses and co-existing conditions, performed procedures, date of admission, discharge, medication and in-hospital death. Observed survival was estimated using the Kaplan-Meier method.

Results: Among 1271 patients with both AF and HF, (age 74±13, 771 men [61%]), 582 had permanent AF and 689 had non permanent AF (paroxysmal and/or persistent). Patients were treated on an individual basis with a beta-blocker alone (BB, 260/1271), both a beta-blocker and digoxin (BB+Dig, 189/1271), digoxin alone (Dig, 403/1271) or with conventional treatment (ACE inhibition and/or diuretics) without beta-blocker nor digoxin (control, 419/1271). During a follow-up of 881±859