Introduction: Patients who have progressed to chronic atrial fibrillation (AF) usually presented both atrial remodeling coexisting elevated pulmonary arterial pressure without other secondary causes. However, it is unclear whether progression to chronic structural remodeling in AF patients with preserved left ventricular ejection fraction (LVEF) is associated with long-term clinical outcome including all-cause mortality or hospital admission.

Methods: We enrolled 5,585 consecutive AF patients (≥19 years, mean age 66 ± 13 years, 41.1% female) in a tertiary hospital from 2007 to January 2017. Chronic AF structural remodeling (CAFR) was defined as both atrial enlargements including left atrial antero-posterior diameter ≥50mm, pulmonary arterial pressure ≥35mmHg and LVEF ≥50% on transthoracic echocardiography. AF patients with preserved LVEF were divided into two groups: group 1 (1,102 patients with CAFR) and group 2 (1,661 patients without CAFR).

Result: There were no significant differences in age (p=0.330), female (p=0.609), LVEF (p=0.607) and the proportions of comorbidities including hypertension (p=0.226), diabetes mellitus (p=0.751) and heart failure (HF) (p=0.054) between two groups. Mean follow-up durations were 77.6 ± 42.2 (group 1) and 65.6 ± 35.7 (group 2) months, respectively. Kaplan-Meier estimates showed a significant difference in hospitalization for HF (Log-rank p<0.001), but there was a significant difference in any cause death (Log-rank p=0.182) between two groups. In Cox proportional-hazards models, after adjusting relevant risk factors, chronic kidney disease (hazards ratio [HR] 1.89, 95% CI 1.48-2.41, p<0.001) and CAFR (HR 1.33, 95% CI 1.11-1.59, p=0.001) with admission for HF.

Conclusion: This study suggests that progressive structural atrial remodeling in AF patients with preserved LVEF is independently associated long-term clinical worse outcome of hospitalization for HF.