Difference of Impact of Rate and Rhythm Control on Mortality among Atrial Fibrillation Patients with Heart Failure with Preserved, Mid-ranged and Reduced Ejection Fraction

**Introduction**: New onset atrial fibrillation (AF) in heart failure (HF) patients has been associated with increased mortality, and lowering AF burden in patients coexisting HF, especially with reduced ejection fraction was associated with lower rate of death from any cause and lower rates of hospitalization for HF. However, it is unclear whether sinus rhythm restoration is associated with all-cause mortality or hospital admission in AF patients with HF with preserved (HFpEF), mid-ranged (HFmrEF), and reduced ejection fraction (HFrEF).

**Methods**: We enrolled consecutive 500 patients (mean age 72.4±12.8 years, 53.6% female) who developed HF with coexisting AF in a tertiary hospital from January 2010 to December 2017. We divided HF patient into three groups by ejection fraction (EF): (HFrEF(EF≥50%), HFmrEF(EF 40-49%) HFrEF(EF<40%), and each groups divided to 3 subgroups - one with sinus rhythm (SR) restoration, another with only rate controlled under 110 beats per minute (BPM), and the other who are not.

**Result**: Total 500 patients who diagnosed HF with AF were enrolled (278 (55.6%) patients with HFpEF, 105 (21.0%) patients HFmrEF, and 117 (23.4%) patients HFrEF). In AF with HFmrEF, those who were with sinus rhythm restored showed significant increased survival rate (100.0% vs 90.9%, p=0.041) (Fig A). In AF with HFpEF, it was a significant lower HF admission rate on a group of SR restored (p=0.021) and of rate controlled (p=0.004) than them of poorly rate controlled without SR restoration (Fig B). AF with HFrEF who had history of SR restored or rate controlled tended to have lower survival rate although it did not reach statistical significance (p=0.08) (Fig A-3), however, they showed a significant lower HF admission rate than without SR restoration (68.8% vs 62.5%).

**Conclusion**: This study suggest that low AF burden in patients of AF with HF might be correlated to better prognosis, and prevent worsening HF. More large prospective study is needed for better investigation.