

Hs-CRP Predicts New-Onset HF in Patients Treated with Statin for Primary Prevention

¹ Cardiovascular Center, Korea University Guro Hospital, Seoul, Korea*Yoonjee Park¹, Byoung-Geol Choi¹, Seung-Woon Rha¹

Background: The inflammatory biomarker high-sensitivity C-reactive protein (hsCRP) is known to be associated with the progression and worsening of heart failure (HF). We evaluated the impact of hsCRP on the development of new onset HF in patients (pts) taking moderate-intensity statin for primary prevention. **Methods:** Pts without HF(N-terminal pro-B-type natriuretic peptide (NT-proBNP) > 400 pg/ml) were enrolled and divided into 4 quartiles according to hsCRP levels. New-onset HF as primary endpoint and other cardiovascular events as secondary endpoints were evaluated up to 9 years. **Results:** Compared to the lowest quartile (<0.46 mg/L, n = 1224), the highest quartile (>1.86 mg/L, n = 1194) of hsCRP was associated with a higher incidence of new-onset HF [OR = 2.28, (95% CI 1.63-3.20), $p < 0.001$]. Even after proportional hazard cox-regression adjusted by age, gender, cardiovascular comorbidities including arrhythmia, hypertension, diabetes, chronic kidney disease, laboratory parameters and medications including types of statins, there was a weaker but still significant relationship between higher levels of hsCRP and the development of new-onset HF [HR = 1.74, (95% CI 1.23-2.46), $p = 0.002$, figure]. **Conclusions:** In our study, hsCRP levels remaining high even after moderate-intensity statin treatment significantly predicted the development of new-onset HF during long-term follow-up. Risk stratification according to the level of hsCRP may help identify pts who need additional attention for future deterioration of cardiac function.

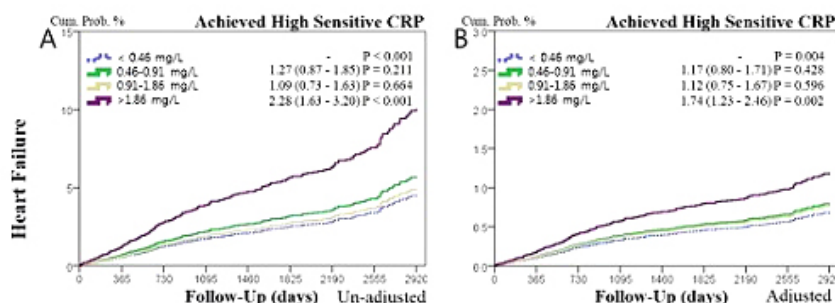


Figure. In proportional hazard cox-regression adjusted by age, gender, body mass index, hypertension, diabetes, chronic kidney disease, eGFR, heart failure, persistent AF, Angina pectoris; laboratory findings including lipid parameters, fasting glucose, HbA1c, Creatinine, lipoprotein and apolipoproteins; medications including types of statins, antiplatelets, anticoagulation, beta blockers, diuretics, ARB or ACEI, CCB and antianginal medication; there was significantly higher incidence of De Novo Heart failure in the group with higher levels of high sensitive-CRP.

Hs-CRP as a Predictor of De Novo AF in Patients Treated with Moderate-Intensity Statin

¹ Cardiovascular Center, Korea University Guro Hospital, Seoul, Korea ²Cardiology Department, Soonchunhyang university cheonan hospital, cheonan, Korea ³Cardiology Department, Eulji General Hospital, Seoul, Korea ⁴Department of Cardiology, Soonchunhyang University Gumi Hospital, Gumi, Korea ⁵Division of Cardiology, Department of Internal Medicine, Kangwon National University School of Medicine, Chuncheon, Korea

*Yoonjee Park¹, Byoung-Geol Choi¹, Seung-Woon Rha¹, Sung Hun Park¹, Sang-Ho Park², Ji Young Park³, Ji Hun Ahn⁴, Yong Hoon Kim⁵, Ae-Young Her⁵, Cheol-Ung Choi¹, Chang-Gyu Park¹, Hong-Seog Seo¹, Dong-Joo Oh¹

Background: Inflammation affects development of atrial fibrillation (AF) by means of atrial remodeling. Statins are known to have a protective effect on this relationship. Previous studies have been centered on postoperative new-onset AF or post-ablation recurrence of AF, but whether inflammation induces de novo AF in dyslipidemia patients on chronic statin therapy for primary prevention is uncertain. **Methods:** A total 4803 consecutive dyslipidemia patients (pts) without AF were given moderate-intensity statin for primary prevention from March 2004 to May 2014. Patients were divided into 4 groups according to high sensitivity C-reactive protein (hsCRP) levels, and the development of AF identified by echocardiography was followed for 9 years. **Results:** Compared to the lowest quartile (<0.46 mg/L, n = 1224), the highest quartile (>1.86 mg/L, n = 1194) of hsCRP was associated with a higher incidence of de novo AF [OR = 3.76, (95% CI 2.12-6.66), $p < 0.001$]. In proportional hazard cox-regression adjusted by age, gender, cardiovascular co-morbidities, chronic kidney disease, lipid parameters, fasting glucose, HbA1c, Creatinine, apolipoproteins, and medications including types of statins, there was significantly higher incidence of new-onset AF in the highest quartile of hsCRP, compared to the lowest quartile [HR = 3.28, (95% CI 1.82-5.88), $p < 0.001$, figure]. **Conclusions:** In our study, high hsCRP levels strongly predicted the development of new-onset AF in moderate-intensity statin-treated dyslipidemia pts during 9-year follow-up.

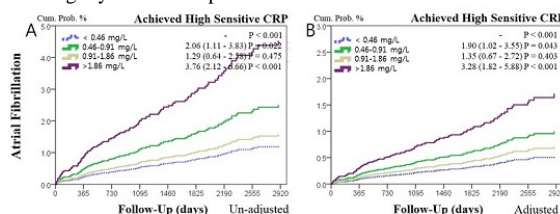


Figure. In proportional hazard cox-regression adjusted by age, gender, body mass index, hypertension, diabetes, chronic kidney disease, eGFR, heart failure, persistent AF, Angina pectoris; laboratory findings including lipid parameters, fasting glucose, HbA1c, Creatinine, lipoprotein and apolipoproteins; medications including types of statins, antiplatelets, anticoagulation, beta blockers, diuretics, ARB or ACEI, CCB and antianginal medication; there was significantly higher incidence of De Novo Atrial fibrillation in the group with higher levels of high sensitive-CRP.