**Introduction**: There was little known about renal function changes over time and transient worsening of renal function in patients with atrial fibrillation (AF) undergoing non-vitamin K-dependent antagonist oral anticoagulants (NOAC). The purpose of this study is to evaluate the incidence of acute kidney injury (AKI) and efficacy and safety of NOAC in AF patients with AKI.

**Methods**: Patients with nonvalvular AF who started taking a NOAC from 2015 to 2017 were identified. Between 2015 and 2017, data was analyzed 279 patients with treatment NOAC, who underwent two or more serial creatinine measurements. AKI was defined as (a) an increase in serum creatinine (sCr) of ≥ 0.3mg/dl; (b) an increase in sCr to ≥ 150% of baseline. We defined major adverse cardiovascular events (MACEs) as the composite of all-cause mortality, myocardial infarction, or stroke; and cardiovascular hospitalization, and clinically significant major bleeding. The risk of MACEs, cardiovascular hospitalization, and major bleeding were analyzed with Cox proportional hazard models.

**Result**: Among 279 patients included in the analysis, the median age was 71 years and 49.5% of patients were male. AKI was observed in 59 patients (21.1%) and was associated with older age, DM, and heart failure. The risk of MACE and major bleeding was not significant associated with AKI (HR, 1.251; 95% CI, 0.246-6.367 for MACE; and HR, 1.895; 95% CI, 0.339-10.605 for major bleeding). Only cardiovascular hospitalization was significantly higher in patients with AKI (HR, 2.789; 95% CI, 1.182-6.58).

**Conclusion**: AKI is more common in patients with older age, DM, and heart failure in AF patients with NOAC. The patients with AKI had a higher risk of cardiovascular hospitalization than the patients without AKI. Our results suggest that identification of renal function is essential to reduce the risk of cardiovascular hospitalization.