KSN 2020
FULLY VIRTUAL MEETING

Abstract Type : Poster
Abstract Submission No. : PO-1121

Chronic Kidney Disease and Undiagnosed Atrial Fibrillation in Individuals with Diabetes

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Objectives: Diabetes is an independent risk factor for atrial fibrillation (AF), which is associated with increases in mortality and morbidity. Renal involvement in diabetes is common, and since chronic kidney disease (CKD) shares several of the same putative mechanisms as AF it may contribute to its increased risk in individuals with diabetes. The objective of this study is to identify the relationship between CKD and AF in individuals with diabetes taking part in a screening program using a self-applied wearable ECG patch.

Methods: The study included 608 individuals with diabetes among 1,738 actively monitored participants in the prospective mSToPS trial. Participants, without a prior diagnosis of AF, wore an ECG patch for 2 weeks, twice, over a 4-months period and followed clinically through claims data for 1 year. Definitions of CKD included ICD-9 or ICD-10 chronic renal failure diagnostic codes, and the Health Profile Database algorithm. Individuals requiring dialysis were excluded.

Results: 15.8% of study participants with diabetes also had a diagnosis of CKD. Over 12 months of follow-up, 19 new cases of AF were detected among the 608 participants with diabetes. AF was newly diagnosed in 7.3% of participants with CKD and 2.3% in those without ($P<0.05$) over 12 months of follow-up. In a univariate Cox regression, the risk of incident AF was 3 times higher in individuals with diabetes and CKD relative to those without CKD: HR 3.106 (95% CI, 1.2-7.9). After adjusting for the effect of age, and sex, and hypertension, the risk of incident AF was still significantly higher in those with CKD : HR 2.886 (95% CI, 1.106-7.529)

Conclusions: Among individuals with diabetes, CKD significantly increases the risk of incident AF. Identification of AF prior to clinical symptoms through active ECG screening could help to improve the clinical outcomes in individuals with CKD and diabetes.