# Vascular Dysfunction and Coronary Artery Calcium Increase with the Presence of End Stage Renal Disease

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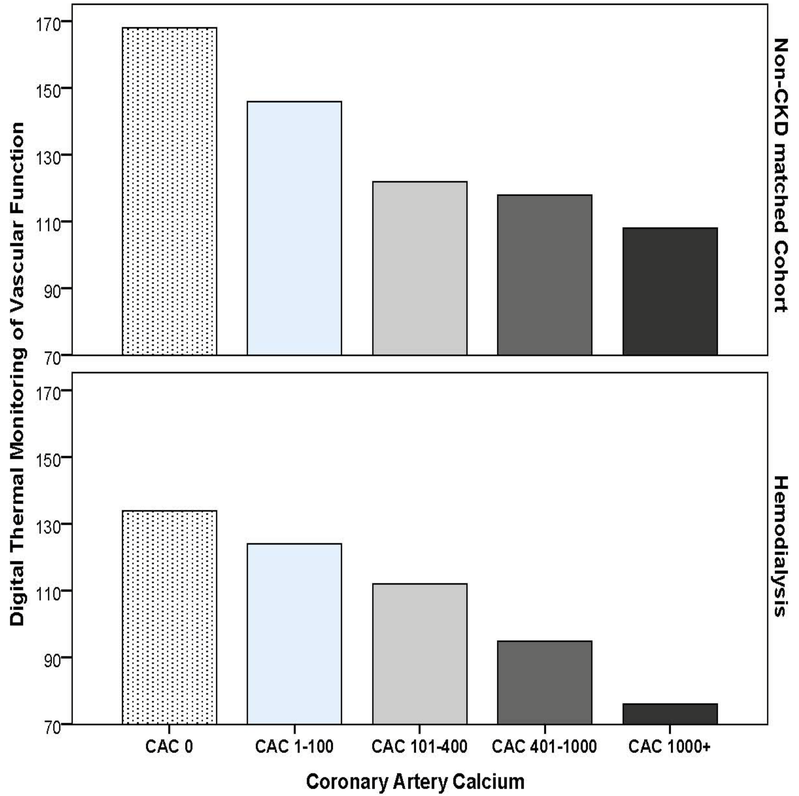
## INTRODUCTION

- Numerous studies have shown high rate of cardiovascular morbidity and mortality among maintenance hemodialysis patients which increase with the presence and severity of coronary artery calcium (CAC).
- The current study investigates the association of vascular dysfunction measured by digital thermal monitoring (DTM) with severity of CAC in maintenance hemodialysis patients compared to a matched cohort without chronic kidney disease (non-CKD).

## METHODS & RESULTS

- Study population consisted of 105 maintenance hemodialysis patients (age: 57 ± 12, males 49%) and 105 age, gender and traditional cardiovascular risk factor matched non-CKD cohort.
- All participants underwent CAC and DTM. Area under the temperature curve (TMP-AUC), DTM index of vascular function, was assessed through a 5-minute arm-cuff reactive hyperemia test.
- TMP-AUC decreased significantly from Non-CKD to those on hemodialysis (143±80 vs. 114±72, p=0.001). Similarly, CAC (Agatston score) increased from Non-CDK (240±332) to hemodialysis (525±425)(p=0.0001).
- After adjustment for age, gender, DM, HTN, hypercholesterolemia, smoking, ethnicity and race, the risk for each standard deviation decrease in TMP-AUC was 1.46 (95%CI 1.12-1.93,p=0.007) in hemodialysis compared to Non-CKD. TMP-AUC decreased with increasing CAC (0,1-100,101-400,401-1000 & 1000+) which was significantly higher in patients on hemodialysis compared with Non-CKD (P<0.05).
- The relative risk of increase in CAC from 0 to 1-100, 101-400, 401-1000 and 1000+ was 5.29 (95%CI 1.82-15.38,p=0.002), 7.49 (95%CI 2.45-22.85,p=0.0001), 10.88 (95%CI 3.82-31.03,p=0.0001), and 13.98 (95%CI 4.86-40.14,p=0.0001) in those on hemodialysis compared to Non-CKD, respectively.




## CONCLUSIONS

- Vascular dysfunction increased with the severity of coronary atherosclerosis in these hemodialysis patients independent of conventional risk factors; suggesting the importance of subclinical atherosclerosis assessment in maintenance hemodialysis.

## KEY LEARNINGS

- ✓ Maintenance hemodialysis patients were associated with significant vascular dysfunction and coronary atherosclerosis compared with non-CKD patients.
- ✓ It is important to perform subclinical atherosclerosis assessments in this population.

We thank the patients who participated in this study and DaVita Clinical Research® (DCR) for grant funding and support in preparing this poster. DCR is committed to advancing the knowledge and practice of kidney care.

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