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# Vascular calcification - a novel risk factor for kidney function decline in patients with normal eGFR

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**Objectives:** The relationship between vascular calcification and CKD is well known; however, whether vascular calcification affects renal function deterioration remains unclear. It was investigated whether kidney function deteriorated more rapidly in individuals with higher vascular calcification indicated by coronary artery calcium score (CACS).

**Methods:** Patients with a normal eGFR (> 60 ml/min/1.73m2) who underwent cardiac computed tomography in our institution (Soonchunhyang University Cheonan Hospital, Cheonan, Korea) from January 2010 to July 2012 were retrospectively reviewed. Among 2,239 patients, 984 had CACS of 0 (CACS 0 group). Patients with CACS > 0 were categorized into three tertiles as follows: CACS 1 – 44, 45 – 264, and > 264.

**Results:** Participants were followed up for 5.8 (interquartile range, 3.8 – 6.8) years. Adjusted annual rates of eGFR decline estimated with a robust linear regression model were more rapid in the highest CACS group compared to those in the CACS 0 group (adjusted-β [95% CI], -0.55 [-0.88 – -0.22]). Results from a linear mixed model were comparable (adjusted-β [95% CI], -0.54 [-1.13 – -0.05]). Adjusted-ORs of CACS > 264 group for rates of eGFR decline 3 – 5 ml/min/1.73m2 per year and eGFR > 5 ml/min/1.73m2 per year were 2.02 (1.42 – 2.87) and 1.64 (1.17 – 2.31), respectively. Adjusted-HR of CACS > 264 group for KDIGO criteria (drop in eGFR category accompanied by 25% or greater drop in eGFR) was 1.88 (1.24 – 2.85).

**Conclusions:** Our results showed that renal function declined more rapidly in patients with higher CACS, suggesting that vascular calcification might be a risk factor for CKD.

Figure 1

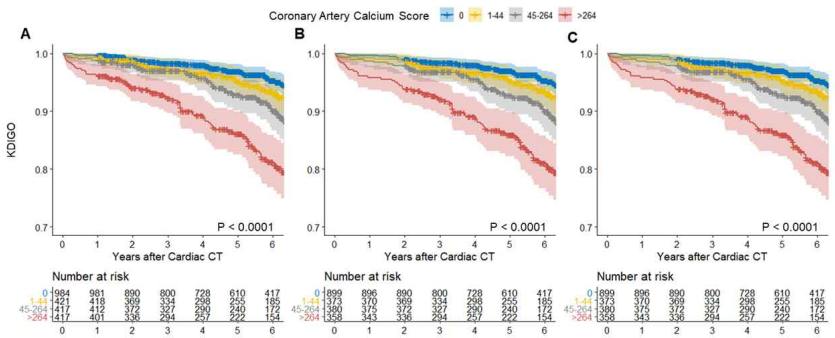


**Figure 1. Kaplan-Meier curve of renal outcomes according to CACS groups.** The probability of renal outcome development in entire cohort is presented. Renal outcomes are defined by a sustained drop in GFR category accompanied by 25% or greater drop in eGFR from baseline defined by KDIGO in patients with follow-up more than (A) one year, (B) two year, or (C) three year.

***Abbreviations:*** CACS, coronary artery calcium score; CT, computed tomography.