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Urinary angiotensinogen to creatinine ration (UAGT/Cr) is not a predictive biomarker for renal progression in autosomal dominant polycystic kidney disease: KNOW-CKD study

Hayne Cho Park¹, Juhee Kim¹, AJin Cho¹, Young-Ki Lee¹, Hyunjin Ryu², Hyunsuk Kim³, Kook-Hwan Oh², Yun Kyu Oh⁴, Curie Ahn²

¹Department of Internal Medicine-Nephrology, Kangnam Sacred Heart Hospital, Korea, Republic of

²Department of Internal Medicine-Nephrology, Seoul National University Hospital, Korea, Republic of

³Department of Internal Medicine-Nephrology, Chuncheon Sacred Heart Hospital, Korea, Republic of

⁴Department of Internal Medicine-Nephrology, SMG-SNU Boramae Medical Center, Korea, Republic of

Objectives: Intrarenal renin-angiotensin-aldosterone system (RAAS) is known to play the major role in the development of hypertension and renal progression in autosomal dominant polycystic kidney disease (ADPKD). Urinary angiotensinogen to creatinine ratio (UAGT/Cr) was suggested as a novel biomarker to reflect intrarenal RAAS activity. This study was performed to evaluate UAGT/Cr as a predictive biomarker for renal function decline in a prospective ADPKD cohort.

Methods: From May 2011 to January 2016, a total of 364 ADPKD patients were enrolled in the prospective cohort called the KoreaN Cohort Study for Outcomes in Patients With Chronic Kidney Disease (KNOW-CKD). UAGT was measured by commercial sandwich enzyme-linked immunosorbent assay (Immuno-Biological Laboratories, Co., Ltd., Gunma, Japan). The estimated glomerular filtration rate (eGFR) was calculated from IDMS-calibrated central laboratory by CKD-EPI (Cr). The annual eGFR decline rate and htTKV growth rate was compared among UAGT/Cr quartile groups.

Results: The mean age was 48 years and 86.3% had hypertension. Most of the patients were taking RAAS blockers (78.3%). Baseline eGFR was 72.9 ± 32.9 mL/min/1.73m² and htTKV was 716.3 ± 473.4 mL/m. The highest UAGT/Cr quartile (Q4) group showed lower eGFR (66.1 ± 32.5 vs. 75.0 ± 32.7 mL/min/1.73m², $p=0.029$), higher proportion of hypertensive patients (95.4% vs. 83.5%, $p=0.004$), and larger htTKV (856.5 ± 511.7 vs. 659.3 ± 447.8 mL/m, $p=0.022$). However, the annual eGFR slope was not significantly different in Q4 group compared to other groups (-2.89 ± 2.05 vs. -2.59 ± 1.98 mL/min/1.73m² per year, $p=0.27$). The annual growth rate of htTKV was not significantly different between groups (75.0 ± 145.8 vs. 38.5 ± 55.3 mL/m per year, $p=0.326$). After adjusting for baseline eGFR, age, and hypertension, UAGT/Cr was not a significant predictor for renal function decline ($B= -0.20$, $p=0.733$).

Conclusions:

UAGT/Cr may reflect current renal function but cannot predict renal progression in ADPKD.