

Oral Communication Abstract

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Characteristics of rapid progressors in the Korean patients with Autosomal Dominant Polycystic Kidney Disease: results from the KNOW-CKD study

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Objectives: Image classification using height-adjusted total kidney volume (HtTKV) has been appraised as a useful biomarker to predict disease progression in autosomal dominant polycystic kidney disease (ADPKD). This study was performed to demonstrate the rate of kidney growth and renal function decline according to image classification in Korean ADPKD patients.

Methods: A total of 197 ADPKD patients from KNOW-CKD cohort study were enrolled and prospectively observed for an average duration of 6.8 ± 1.7 years. Estimated glomerular filtration rate (eGFR) was measured annually using CKD-EPI formula. TKV was measured by both ellipsoid equation and stereologic method using Image J. Rapid progressor was defined as image classification 1C through 1E while slow progressor as 1A through 1B.

Results: A total of 125 patients (63.5%) were classified as rapid progressor. They were younger and showed a higher proportion of male patients. The annual eGFR declining rate was greater in rapid progressor (-3.67 mL/min per year in 1C, -3.56 in 1D, -4.5 in 1E) compared to slow progressor (-1.44 mL/min per year in 1A and -1.97 in 1B). The rate of kidney growth was faster in rapid progressor (8.7% per year in 1C, 13.4% in 1D, and 17.6% in 1E) compared to slow progressor (2.1% in 1A and 9.1% in 1B). Compared to HALT-PKD or TEMPO 3:4 cohort, Korean ADPKD cohort showed similar rate of renal function decline (Table 1) but faster growth of TKV (Table 2). Rapid progressor defined by image classification was also a good predictive tool for patient death and renal composite outcome.

Conclusions: Image classification is a good predictive tool to define rapid progressor even in Korean patients. Korean patients with ADPKD demonstrated comparable decline rate of eGFR but faster growth of TKV according to image classification when compared to Caucasian ethnicity.

Table 1. Comparison of eGFR slopes by image classification in different ADPKD cohort

		Class 1B	Class 1C	Class 1D	Class 1E
TEMPO 3:4 (=447)	eGFR slope (mL/m in/1.73m ² per yr)	-1.79	-3.59	-3.89	-4.93
	95% CI	-3.08, -0.51	-4.18, -3.0	-4.54, -3.24	-5.87, -3.99
HALT-PKD (n=247)	eGFR slope (mL/m in/1.73m ² per yr)	-1.96	-2.82	-3.72	-5.69
	95% CI	-0.8, 0.61	-1.12, 0.21	-0.2, 1.45	-0.3, 2.82
KNOW-CKD (n=197)	eGFR slope (mL/m in/1.73m ² per yr)	-1.97	-3.67	-3.56	-4.5
	95% CI	-2.13, -0.75	-2.39, -1.55	-4.13, -3.2	-4.17, -2.94

Table 2. Comparison of TKV slopes by image classification in different ADPKD cohort

		Class 1B	Class 1C	Class 1D	Class 1E
TEMPO 3:4 (=447)	TKV slope (%/year)	3.25	5.12	5.62	7.75
	95% CI	1.5, 5.03	4.35, 5.9	4.58, 6.68	6.16, 9.35
HALT-PKD (n=247)	TKV slope (%/year)	4.91	7.17	7.55	8.6
	95% CI	-1.8, 0.66	-2.13, 0.04	-2.8, -0.27	-3.57, 1.18
KNOW-CKD (n=197)	TKV slope (%/year)	9.08	8.71	13.35	17.57
	95% CI	5.49, 12.67	5.47, 11.95	9.36, 17.36	11.26, 23.87