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The presence of simple renal cyst is associated with increased risk of albuminuria in young adults

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Objectives: It is well-known that the prevalence of simple renal cyst increases with age. However, simple cysts are occasionally found in adults younger than 40 years of age. This cross-sectional study evaluated the clinical significance of simple renal cysts in young adults, focusing on the associations with hematuria and albuminuria.

Methods:

Adults younger than 40 years who received a comprehensive medical checkup from January 2005 to December 2013 were included. Simple renal cysts were identified by ultrasonography.

Results:

Among 5832 subjects, renal cysts were found in 276 (4.7%). Subjects diagnosed with polycystic kidney disease (n=5) or medullary sponge kidney (n=1) were excluded from the analyses. A single cyst and multiple cysts were found in 234 (4.0%) and 42 (0.7%) subjects, respectively. The locations of single cyst were cortex in 187, medulla in 26, and parapelvic region in 21. Age (odds ratio [OR], 1.07; 95% confidence interval [CI], 1.02-1.12 per 1-year increment, P = 0.002), systolic BP (OR, 1.01; 95% CI, 1.00-1.02 per 1-mmHg increment, P = 0.006), and hypertension (OR, 1.85; 95% CI, 1.24-2.76, P = 0.003) were independent predictors of the presence of simple cyst. The presence of cysts was not associated with increased prevalence of hematuria. While, the subjects with cysts had higher prevalence of albuminuria than those without cysts (11.3% vs. 4.5%, P <0.001, figure). Multivariate analyses of albuminuria revealed that the presence of simple renal cyst was associated with a 2.30-fold increase in the prevalence of albuminuria (95% CI 1.512-3.519, P <0.001, table) independently of other risk factors. The location of the cysts was not related to the prevalence of albuminuria.

Conclusions:

The presence of simple renal cysts was independently associated with increased prevalence of albuminuria. The causal relationship between renal cysts and albuminuria needs to be elucidated in further studies.

Figure. Prevalence of albuminuria according to cyst status

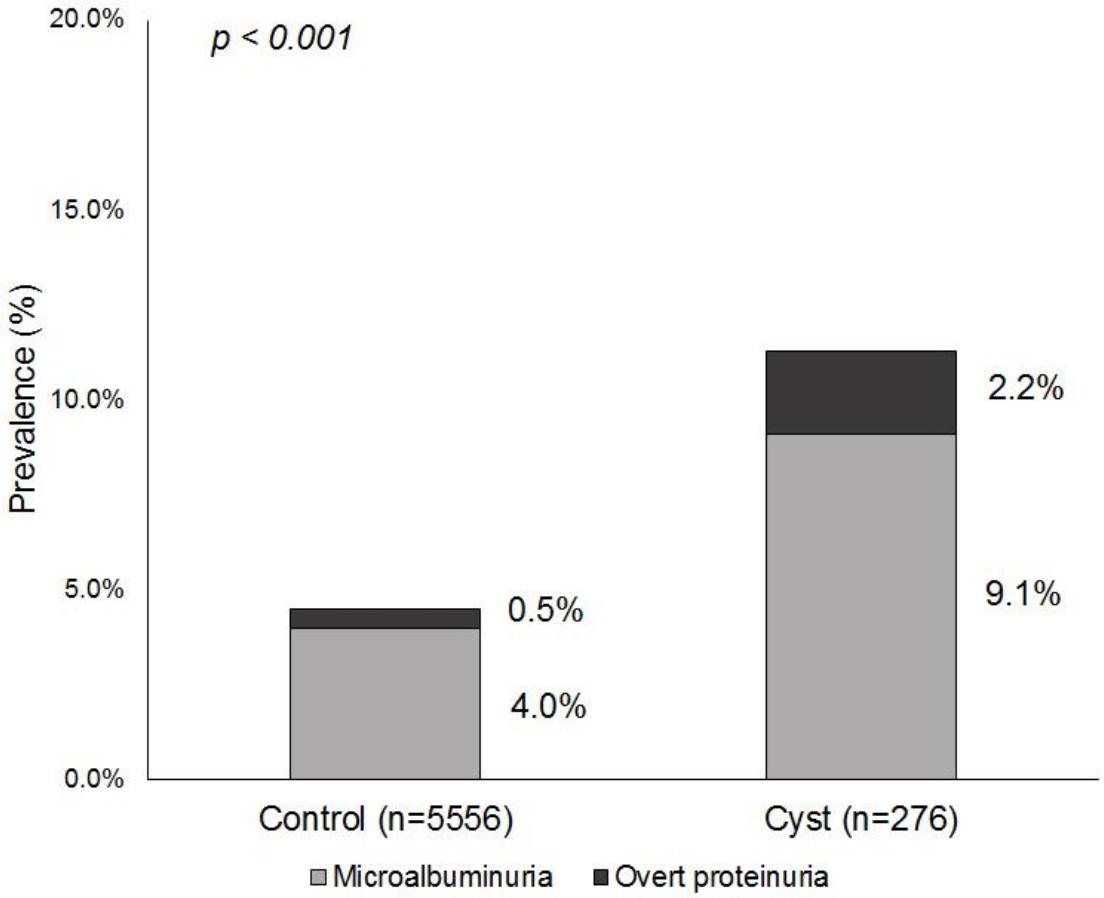

Table. Multivariate logistic regression analysis of albuminuria

	Multivariate analysis	
	OR (95% CI)	*P*-value
Age, yr	0.964 (0.929-1.000)	0.051
Male	0.339 (0.232-0.497)	<0.001
BMI, kg/m^2	1.014 (0.975-1.054)	0.487
SBP, mmHg	1.020 (1.011-1.028)	<0.001
Hypertension	2.262 (1.563-3.273)	<0.001
Diabetes mellitus	1.890 (1.032-3.461)	0.039
HbA1c, %	1.434 (1.204-1.708)	<0.001
eGFR, mL/min/1.73 m^2	0.989 (0.979-0.999)	0.039
Renal cyst	2.307 (1.512-3.519)	<0.001
Triglyceride, mg/dl	1.002 (1.001-1.002)	0.002
HDL-cholesterol, mg/dl	1.005 (0.995-1.014)	0.336
LDL-cholesterol, mg/dl	0.998 (0.994-1.003)	0.467
Uric acid, mg/dl	1.227 (1.099-1.370)	<0.001

OR, odds ratio; CI, confidence interval; Albuminuria defined as a urine albumin to creatinine ratio > 30μg/mg; BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; HbA1c, hemoglobin A1c; eGFR, estimated glomerular filtration rate; HDL, high-density lipoprotein; LDL, low-density lipoprotein