Predictive factors for progression of chronic kidney disease in children: Results from a national cohort study

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Objectives: The prevalence of chronic kidney disease (CKD) in children has increased over the last decades. Comprehensive studies on pediatric CKD are rare in Asian countries. We aimed to evaluate predictive factors for the progression of CKD using a national pediatric cohort study, KNOW-Ped CKD (KoreaN cohort study for Outcome in patients With Pediatric CKD).

Methods: From 437 enrolled pediatric patients with stage 1 to 5 of CKD, 432 patients who followed up at least 6 months between July 2011 and May 2017, were reviewed. The progression of CKD was defined as a composite renal event of renal replacement therapy (RRT) or a 50% decline in glomerular filtration rate. The baseline clinical and laboratory variables included in the analysis.

Results: The progression of CKD was occurred in 136 (31.4%) patients after median follow ups of 1.9 (IQR 0.7-3.2) years. In Kaplan-Meier analysis, the median renal survival of all included CKD patients was estimated as 5.2 years. The progression of CKD was shorter in patients with glomerulopathy than non-glomerulopathy patient (5.1 years vs. 5.3 years, log-rank test $P =0.008$). In multivariate analysis, after adjustment with Cox regression model, 6 variables remained as independent predictive factors of CKD progression: boy, CKD stage 4 and 5, left ventricular hypertrophy, urine protein/creatinine ratio $\geq$2.0 mg/mg, serum albumin <3.8 mg/dL, and anemia. Among them, hypoalbuminemia and anemia could be modifiable and treatable.

Conclusions: Using a national cohort, we could confirm the risk factors for CKD progression. Modifiable factors could be implied in clinical management of pediatric CKD patients.