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Longitudinal progression trajectory of estimated GFR in children with chronic kidney disease: Results from the KNOW-Ped CKD

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Objectives: Predicting the progression of loss of kidney function in children with chronic kidney disease (CKD) is often not straightforward. This study aimed to identify a clinically relevant subgroup of kidney function trajectories in children with CKD.

Methods: We analyzed data from the KoreaN cohort study for Outcomes in subjects With Pediatric Chronic Kidney Disease (KNOW-Ped CKD) cohort, a longitudinal, prospective cohort study with a median follow-up of 9 years with all-stage CKD at baseline. A latent class linear mixed model was applied to identify the trajectory groups according to subjects' eGFR.

Results: The median baseline eGFR of the study population was 65.7 mL/min/1.73 m^2 per year, and the median age was 10.6 years. Children with glomerular disease had an older median age, a higher baseline eGFR, a greater use of renin/angiotensin system inhibitors, and worse hypoalbuminemia, and proteinuria than with non-glomerular disease. In contrast, more children with non-glomerular disease were underweight, were preterm births, and had advanced CKD at baseline. The average annual rate of decline in eGFR was not different according to the causes of CKD. The trajectory of eGFR over time was classified into four groups. Two had a slow linear decline of eGFR over time with different baseline eGFRs. The other two had normal eGFRs at baseline with a rapid decline in eGFR over time (n=11) and a normal eGFR at baseline with a stable trend over time (n=101). In the two trajectory subgroups with a normal eGFR, after adjusting for age, sex, and baseline eGFR, massive proteinuria was significantly associated with trajectories of rapid decline in eGFR in a multivariate analysis.

Conclusions: The majority of children with CKD showed a linear eGFR decline; however, there are different patterns of eGFR trajectories in children with CKD.