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Discrepancy between GFR trends from creatinine and cystatin C in patients with chronic kidney disease: Results from the KoreaN Cohort Study of Outcomes in Patients With Chronic Kidney Disease (KNOW-CKD)

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Objectives: Both serum creatinine (Cr) and cystatin C (CysC) can be used to estimate glomerular filtration rate ($eGFR_{Cr}$ and $eGFR_{CysC}$). Nevertheless, the usefulness of $eGFR_{CysC}$ has not been fully determined. In this respect, it is an important issue when the discrepancy between eGFR trends from both parameters happens in patients with chronic kidney disease (CKD).

Methods: A total of 1,069 patients whose Cr and CysC had been followed more than 4 years were included from the KoreaN Cohort Study for Outcome in Patients With Chronic Kidney Disease (KNOW-CKD) which enrolled predialytic patients with CKD. Trajectory analyses were performed based on the latent class mixed modeling. We defined the discrepancy as having decreasing $eGFR_{Cr}$ but stable $eGFR_{CysC}$. Multivariate logistic plus Firth's penalized likelihood or generalized linear regression models were established to identify the condition related with the discrepancy.

Results: Trajectory pattern of $eGFR_{Cr}$ was classified into three groups: two groups with stable $eGFR_{Cr}$ (stable with high $eGFR_{Cr}$ and stable with low $eGFR_{Cr}$) and one group with decreasing $eGFR_{Cr}$ (Figure 1). Trajectory analysis of $eGFR_{CysC}$ also showed similar patterns such as two groups with stable $eGFR_{CysC}$ and one group with decreasing $eGFR_{CysC}$. When the discrepancy trend (i.e., stable $eGFR_{CysC}$ but decreasing $eGFR_{Cr}$) was set up as the dependent variable, younger age, large proteinuria, and certain type of CKD (e.g, diabetic nephropathy and autosomal polycystic kidney disease) were selected as the predictors of the discrepancy trend. These results remained consistent while other regression models were additionally applied.

Conclusions:

The present study addresses the conditions related with discrepancy trend between $eGFR_{Cr}$ and $eGFR_{CysC}$, which should be notified in the clinics tracing both Cr and CysC.

Figure 1. Trajectory pattern of eGFRCr and eGFRCysC / Abbreviations: eGFR, estimated glomerular filtration rate; Cr, creatinine; CysC, systatin C; SH, stable group with high eGFR; SL, stable group with low eGFR

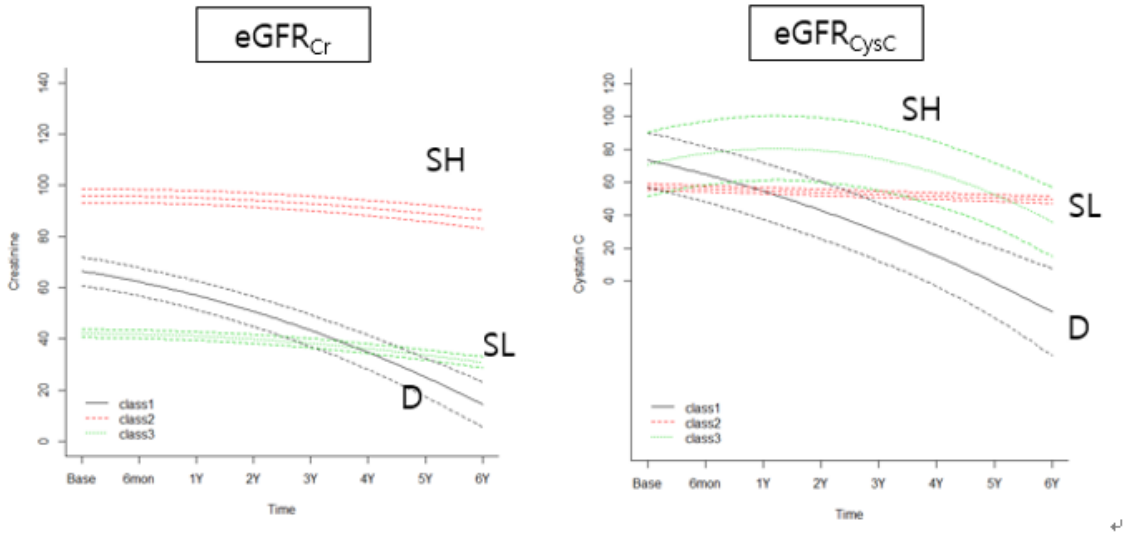

Figure 2. Cross-table between eGFRCr and eGFRCysC / Abbreviations: eGFR, estimated glomerular filtration rate; Cr, creatinine; CysC, systatin C; SH, stable group with high eGFR; SL, stable group with low eGFR