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The Impact of Dynamic Kidney Function prior to Sodium-Glucose Co-Transporter 2 Inhibitor Initiation on Following Renal Function Progression In Type 2 Diabetes Patients

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Objectives : Less study has tried to assess among Type 2 diabetes (T2D), whether combined change in estimated glomerular filtration rate (eGFR) slope and albuminuria percentage change prior to using sodium glucose cotransporter 2 inhibitors (SGLT2is) contribute to different eGFR trajectories after SGLT2is therapy.

Methods : We identified 1866 T2DM patients treated with SGLT2is between 2016 and 2020 from the electronic database of Kaohsiung Medical University Hospital Research Database. There were 422 patients with eGFR <60 and 1442 patients with eGFR >60 mL/min/1.73 m² at baseline, and both groups were examined separately in the study. The combined change of eGFR declines >5 or eGFR declines ≤5 mL/min/1.73 m²/year and UACR increase >30% or UACR increase ≤30% prior one year to SGLT2is initiation for each patient were categorized into four groups, followed by analysis of the changes in the initial eGFR dip after 12 weeks and mean eGFR slope after 2 years.

Results : The mean eGFR was 49.11±9.04 and 88.13±20.44 mL/min/1.73 m² in patients with eGFR <60 and eGFR >60 mL/min/1.73 m² at baseline. Patients who showed eGFR decline ≤ 5 mL/min/1.73 m²/year prior to SGLT2is therapy predicts a larger initial eGFR dip at higher eGFR baseline (P <0.05), with the trend of UACR increase > 30%, the greater the initial eGFR dip (P >0.05). In addition, in patients who showed eGFR decline >5 mL/min/1.73 m²/year, there was a significant slowing of the decline after SGLT2is therapy, compared with before the treatment (P <0.001), independent of UACR percentage change and eGFR baseline. Those with lower eGFR baseline seemed to have improved the mean individual difference of eGFR annual slope to a greater extent.

Conclusions : In T2DM, SGLT2is have renoprotective effects in annual renal function progression with eGFR decline >5 mL/min/1.73 m²/year prior to SGLT2is therapy, regardless of the UACR change.