第2型糖尿病與慢性腎病患者中鈉-葡萄糖協同轉運蛋白抑制劑對不同白蛋白尿分類的腎臟預後

Sodium-Glucose Cotransporter 2 Inhibitors (SGLT2i) in Type 2 Diabetes with Chronic Kidney Disease: Renal Outcomes across Albuminuria Categories

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AIMS

Major kidney trials have predominantly focused on sodium-glucose cotransporter 2 inhibitors (SGLT2i) in patients with significant albuminuria, leaving the impacts on those with lower levels less defined. Assessing SGLT2i's real-world impact across all albuminuria levels is essential.

This study examines real-world effects of SGLT2i on kidney outcomes across all albuminuria levels in type 2 diabetes with chronic kidney disease (CKD) patients, highlighting impacts on lower albuminuria.

METHODS

This study, using a national database from 2016 to 2021, included type 2 diabetes patients with eGFR below 60 mL/min/1.73m², initiating SGLT2i or other oral glucose lowering drugs, divided by urine albumin-to-creatinine ratio (UACR) into ≥300 mg/g and <300 mg/g groups.

Propensity score matching was employed, with multiple follow-up patterns and time spans to assess SGLT2i's effects over time. The study assessed severe acute kidney injury (AKI), indicated by the initiation of first hemodialysis, and progression to end-stage kidney disease (ESKD) using competing risks analysis and Cox proportional regression models.

RESULTS

After matching, our study included 18,514 patients with macroalbuminuria, observing 3.8% initiating hemodialysis and 2.6% progressing to ESKD over three years.

Among 26,946 patients with UACR<300 mg/g, rates were lower: 1.0% for hemodialysis and 0.3% for ESKD progression.

RESULTS

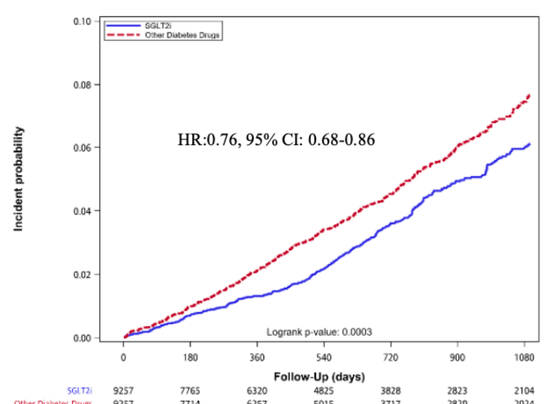
SGLT2i markedly reduced first hemodialysis initiation by 24% and ESKD progression by 30% among those with macroalbuminuria as compared with other oral glucose lowering medications (HR: 0.76, 95% CI: 0.68-0.86 for hemodialysis; HR: 0.70, 95% CI: 0.61-0.80 for ESKD).

However, in lower albuminuria, significant renal protection was not observed, revealing only a non-significant protective trend over an extended three-year follow-up.

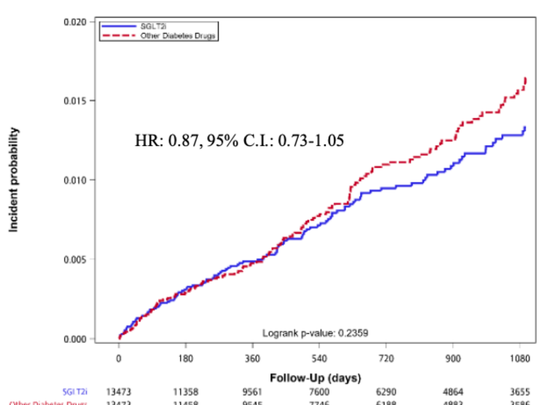
Figure 1. Kaplan-Meier curves of renal outcomes by study treatment after propensity score matching (censored at three years)

A. Hemodialysis

(1) UACR ≥300 mg/g

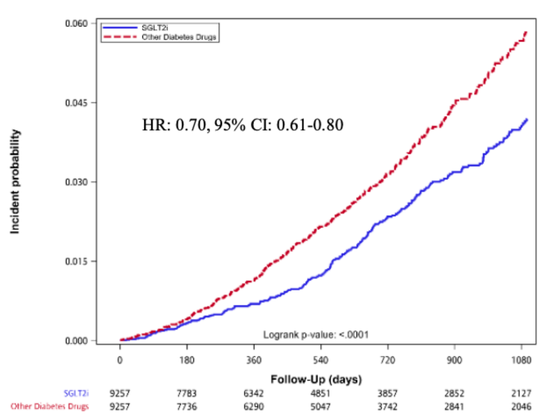


(2) UACR <300 mg/g

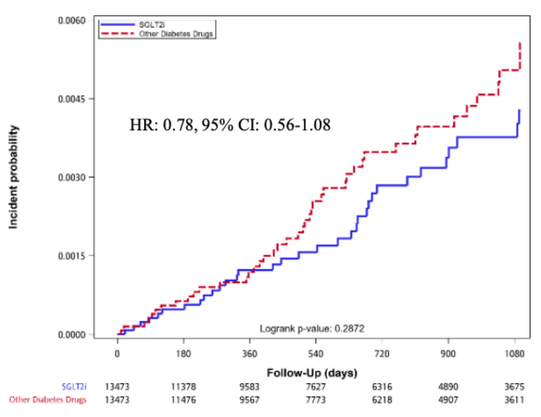


B. ESKD

(1) UACR ≥300 mg/g



(2) UACR <300 mg/g



CONCLUSIONS

Our study demonstrates SGLT2i's significant renal benefits in type 2 diabetes and CKD patients with higher albuminuria. In lower albuminuria, benefits are less evident, suggesting effectiveness varies by albuminuria severity. This necessitates further investigation into SGLT2i's effects across the albuminuria spectrum.