

Empagliflozin (EMPA) and incidence of rapid decline in eGFR in patients with type 2 diabetes mellitus (T2DM) and established cardiovascular disease (CVD): an exploratory analysis from the EMPA-REG OUTCOME trial

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Introduction: The eGFR progressively declines in most patients with T2DM. In some patients a more rapid decline in eGFR is observed, putting them at risk for the consequences of uraemia and ultimately end-stage renal disease. In the EMPA-REG OUTCOME trial, EMPA was associated with slower progression of kidney disease. The objective of this post hoc analysis was to investigate the effect of EMPA on the incidence of a more rapid renal decline in patients.

Methods: The study included 7020 patients with T2DM and established CVD. Participants were randomised (1:1:1) to EMPA 10 mg, 25 mg or placebo (PBO) in addition to standard of care. Change in eGFR decline over the study period (from baseline to follow-up) was calculated by utilising linear regression models. A rapid decline in eGFR was defined by an annual decline in eGFR >5 ml/min/1.73m². Logistic regression analysis was used to investigate differences between EMPA vs PBO groups.

Results: At baseline, mean (SD) eGFR was 74.0 (21.4) ml/min/1.73m². Over the study period, 354 participants (5.1%) experienced a rapid decline in eGFR, including 8.9% in the PBO group and 3.2% in participants receiving EMPA. After adjusting for other risk factors, this equated to two-thirds reduction in risk (Figure, odds ratio 0.33 [95% CI 0.26, 0.41]; p<0.0001) among participants receiving EMPA. A similar reduction among EMPA-treated participants in the incidence of patients experiencing a rapid decline in eGFR was also observed using a lower threshold (Figure).

Discussion: Patients treated with EMPA were significantly less likely to experience a rapid decline in eGFR over approximately 3 years of treatment. This finding suggests that EMPA may have the potential to reduce the incidence of renal impairment in T2DM in the long term.

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