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ORIGINAL RESEARCH ARTICLE

Comparison of the Effects of Glucagon-Like Peptide Receptor Agonists and Sodium-Glucose Cotransporter 2 Inhibitors for Prevention of Major Adverse Cardiovascular and Renal Outcomes in Type 2 Diabetes Mellitus

Systematic Review and Meta-Analysis of Cardiovascular Outcomes Trials

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and 34 322 (44.4%) in SGLT2i trials, were included. Both drug classes reduced MACE in a similar magnitude with GLP1-RA reducing the risk by 12% (hazard ratio [HR], 0.88; 95% CI, 0.84–0.94; *P*<0.001) and SGLT2i by 11% (HR, 0.89; 95% CI, 0.83–0.96; *P*=0.001). For both drug classes, this treatment effect was restricted to a 14% reduction in those with established atherosclerotic cardiovascular disease (HR, 0.86; 95% CI, 0.80–0.93; *P*=0.002), whereas no effect was seen in patients without established atherosclerotic cardiovascular disease (HR, 1.01; 95% CI, 0.87–1.19; *P*=0.81; *P* interaction, 0.028). SGLT2i reduced hospitalization for heart failure by 31% (HR, 0.69; 95% CI, 0.61–0.79; *P*<0.001), whereas GLP1-RA did not have a significant effect (HR, 0.93; 95% CI, 0.83–1.04; *P*=0.20). Both GLP1-RA (HR, 0.82; 95% CI, 0.75–0.89; *P*<0.001) and SGLT2i (HR, 0.62; 95% CI, 0.58–0.67; *P*<0.001) reduced the risk of progression of kidney disease including macroalbuminuria, but only SGLT2i reduced the risk of worsening estimated glomerular filtration rate, end-stage kidney disease, or renal death (HR, 0.55; 95% CI, 0.48–0.64; *P*<0.001).

Conclusions: In trials reported to date, GLP1-RA and SGLT2i reduce atherosclerotic MACE to a similar degree in patients with established atherosclerotic cardiovascular disease, whereas SGLT2i have a more marked effect on preventing hospitalization for heart failure and progression of kidney disease. Their distinct clinical benefit profiles should be considered in the decision-making process when treating patients with type 2 diabetes mellitus.

Key Words: glucagon-like peptide 1 receptor agonists ■ meta-analysis ■ sodium-glucose co ■ transporter-2 inhibitors ■ diabetes mellitus, type 2