Safety and efficacy of sglt2 inhibitors: A multiple-treatment meta-analysis of clinical decision indicators

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Abstract

To jointly assess the safety and effectiveness of sodium-glucose cotransporter 2 inhibitors (SGLT2i) on cardiorenal outcomes and all-cause mortality in type 2 diabetes mellitus (T2DM) with or at high risk of cardiovascular disease (CVD). We performed a systematic review and network meta-analysis, systematically searching the MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials and Web of Science databases up to September 2020. Primary outcomes were composite major adverse cardiovascular events (MACEs), hospitalization for heart failure, all-cause mortality and a composite renal outcome. We performed a random effects network meta-analysis estimating the pooled hazard ratio (HR), risk ratio and number needed to treat (NNT). Six trials evaluating empagliflozin, canagliflozin, dapagliflozin and ertugliflozin met the inclusion/exclusion criteria, which comprised 46,969 patients, mostly with established CVD. Pooled estimates (95% CI) of benefits of SGLT2i in terms of HR and NNT were as follows: for all-cause mortality, 0.85 (0.75, 0.97) and 58 (28, 368); for MACE, 0.91 (0.85, 0.97) and 81 (44, 271); for hospitalization for heart failure, 0.70 (0.62, 0.78) and 32 (20, 55); and for composite renal outcome, 0.61 (0.50, 0.74) and 20 (11, 44). Pooled estimates for serious adverse events were 0.92 (95% CI 0.89, 0.95). In patients with T2DM at cardiovascular risk, ertugliflozin is a less potent drug than empagliflozin, canagliflozin or dapagliflozin to prevent cardiorenal events and all-cause mortality. In addition, our data endorse that empagliflozin is the best treatment option among SGLT2i for this type of patient, but the evidence is not consistent enough. © 2021 by the authors. Licensee MDPI, Basel, Switzerland.

Author keywords

Adverse effects; Cardiovascular disease; Efficacy; Meta-analysis; Mortality; Sodium-glucose cotransporter 2 inhibitors