KSN 2020
FULLY VIRTUAL MEETING

Abstract Type : Oral
Abstract Submission No. : OR-1463

Dapagliflozin on Renal Filtration Function: More Than Glucose-Lowering Effect

Umi Hani Vismayanti Lismana[1], Ema Novalia Dewi Kurnia Sari[2], Agil Noviar Alvirosa[3], Ratih Kusuma Dewi[1]
[1]Department of Emergency, Hermina Hospital Solo, Indonesia
[2]Department of Medicine, Sebelas Maret University (Postgraduate), Indonesia
[3]Department of Emergency, Intan Medika Hospital, Indonesia

Objectives: Dapagliflozin was known as a treatment of choice for glucose control in diabetes patients. Recently, attention has focused on its renoprotective effect through mechanism of hemodynamic and non-hemodynamic. We aimed to assess the effect of dapagliflozin on two key markers of kidney disease: urine albumin:creatinine ratio (UACR) and estimated-glomerular filtration rate (eGFR).

Methods: A literature search was performed in PubMed database within the past ten years to identify randomized controlled trials (RCTs) which assessed the effect of dapagliflozin on renal markers including UACR (mg/g) and eGFR (mL/min/1.73 m^2) in type 2 diabetes patients. The results were reported as mean differences (MD) and confidence interval (CI) using a random-effects model.

Results: A total of 88 participants from two RCTs were included. We found that dapagliflozin significantly decreased UACR compared to placebo [-39.78; 95% CI: -56.56 to -23.01; $p < 0.00001$]. No difference was found on eGFR between the two group [-1.89; 95% CI: -7.08 to 3.29; $p = 0.47$].

Conclusions: Dapagliflozin might be beneficial in improving albuminuria and slowing down the progression of kidney disease. Further studies with larger population and longer period of treatment are needed to assess its effect and safety for long-term use.

Figure 1. Forest plot of dapagliflozin effect on (A) UACR and (B) eGFR

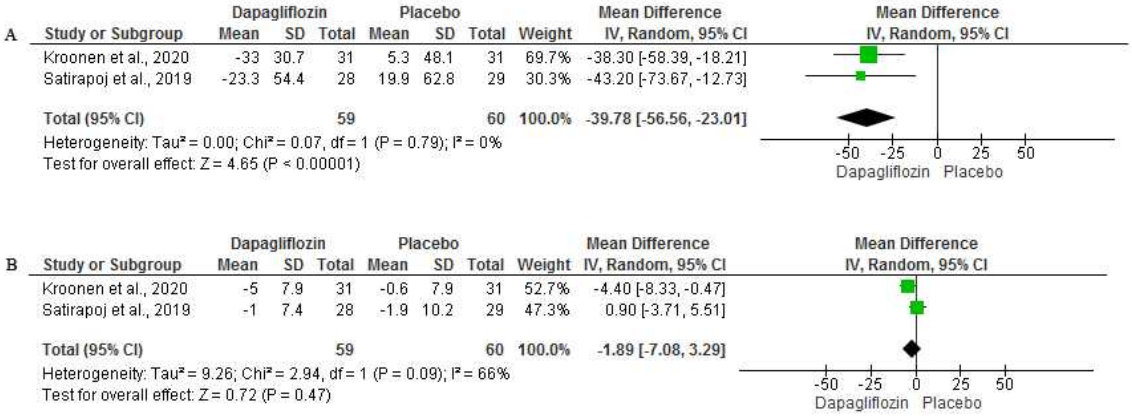

Figure 1. Forest plot of dapagliflozin effect on (A) UACR and (B) eGFR

Table 1. Trial characteristics of dapagliflozin effect on renal markers in patients with type 2 diabetes

Table 1. Trial characteristics of dapagliflozin effect on renal markers in patients with type 2 diabetes

Study	Location	Design	N	Inclusion Criteria	UACR change	eGFR change	Follow up
Kroonen *et al* (2020)	Netherlands	Prospective, randomized, double-blind, placebo-controlled, cross-over, RCT	31	- Aged 18–75 years - T2D with HbA1c between 7.2 and 11.3%, - eGFR ≥ 45 ml/min/1.73m² - UACR ≥ 100 mg/g and < 3500 mg/g - On stable dose of ACEi or ARB for > 4 weeks	-33 ± 30.7 5.3 ± 48.1	−5 ± 7.9 -0.6 ± 7.9	6 weeks each with wash-out periods of 6 weeks in between
Satirapoj *et al* (2019)	Thailand	Randomized, open-label, controlled, RCT	57	- Aged ≥ 18 years - T2D with HbA1c between 7 and 10% - eGFR > 60 mL/min/1.73m² - No treatment adjusted with antihypertensive drugs	-23.3 ± 54.4 19.9 ± 62.8	-1 ± 7.4 -1.9 ± 10.2	12 weeks

Data are mean change ± SD. UACR, urine albumin:creatinine ratio; eGFR, estimated-glomerular filtration rate; RCT, randomized-controlled trial; T2D, type 2 diabetes; HbA1c, hemoglobin A1c; ACEi, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker.