Metabolic and renal outcomes in cardiac surgery patients receiving SGLT2 inhibitors

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Ethische beoordeling	Positief advies
Status	Werving nog niet gestart
Type aandoening	-
Onderzoekstype	Interventie onderzoek

Samenvatting

ID

NL-OMON26563

Bron
Nationaal Trial Register

Verkorte titel
MERCURI

Aandoening

Cardiac surgery associated acute kidney injury

Ondersteuning

Primaire sponsor: Amsterdam UMC location AMC
Overige ondersteuning: The European Research Executive Agency in the form of a Marie Skłodowska-Curie Individual Fellowship awarded to Drs A.H. Hulst

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

Neutrophil gelatinase-associated lipocalin (NGAL) concentration in plasma. Measured on morning of postoperative day 2, between 8:00 and 12:00.

Toelichting onderzoek

Achtergrond van het onderzoek

Rationale: Acute kidney injury is one of the most common complications after cardiac surgery. The new antidiabetic therapy, sodium glucose transport protein 2 inhibitors (SGLT2i) possess renoprotective properties and have been found to reduce acute kidney injury in large cardiovascular outcome trials in patients with diabetes mellitus.
Objective: To investigate the potential of empagliflozin to reduce the acute kidney injury marker neutrophil gelatinase-associated lipocalin (NGAL) on day 2 postoperatively in patients undergoing cardiopulmonary bypass surgery.
Study design: Single-center, open-label, randomized clinical trial.
Study population: Patients undergoing cardiac surgery with cardiopulmonary bypass, aged 18-90 years old.
Intervention: The intervention group receives once daily 10 mg empagliflozin starting 7 days before surgery to be continued until two days postoperatively. The control group will follow usual perioperative care.
Main study endpoint: The primary outcome of the study is the between group difference of Neutrophil Gelatinase-Associated Lipocalin (NGAL) concentration in plasma measured on day 2 after surgery. Secondary outcomes are the between group differences in kidney injury markers (NGAL, KIM-1), kidney function (eGFR), perioperative glycaemia, the incidence of hypoglycaemia, perioperative ketonemia and the incidence of keto-acidosis.
Nature and extent of the burden and risks associated with participation, benefit and group relatedness: For study purposes, an additional 28 ml of blood will be drawn. This will be taken from intravenous or intra-arterial catheters that have been inserted for clinical purposes. Adverse events with empagliflozin treatment are rare. Most often reported are genitourinary infections. While these are most common after prolonged use of SGLT2 inhibitors, for this study, subjects will receive empagliflozin for a period of maximum 10 days. Furthermore, there is a small risk of euglycemic ketoacidosis in the perioperative period related to fasting and surgical stress. Therefore, ketone levels will be measured from admission to the hospital until end of the study. In addition, all patient will receive a glucose-insulin infusion during surgery, to suppress ketone body production. Patient might benefit from this intervention by additional intensive monitoring of metabolic and renal function in the perioperative period. Empagliflozin might reduce the risk of perioperative acute kidney injury. In general, this study will provide more insight in the effect of empagliflozin on parameters of renal function and metabolism in the perioperative setting.

Doel van het onderzoek

We hypothesize that preoperative initiation (7 days before surgery) and perioperative continuation (until day 2 after surgery) of empagliflozin 10 mg daily (10 days total) will

reduce the postoperative concentration of NGAL in plasma on postoperative day 2 after cardiac surgery with cardiopulmonary bypass.

Onderzoeksopzet

For NGAL, KIM-1, plasma ketones and incidence of keto-acidosis:
-On day of surgery:
• Before start of surgery (after placement of arterial line)
• At time of start of cardiopulmonary bypass (+/- 20 min)
• At the end of cardiopulmonary bypass (+/- 20 min)
• At time of transport to ICU (+/- 20 min)
-Postoperatively
• Measured daily, in the morning between 8:00 and 12:00 until postoperative day 2.
For eGFR (creatinine)
• Measured daily, in the morning between 8:00 and 12:00 until postoperative day 4.
For peak and average glucose and incidence of hypoglycaemia:
• any measurement occurring between start of surgery and end of study until postoperative day 4, as part of routine care.

Onderzoeksproduct en/of interventie

Preoperative initiation (7 days before surgery) and perioperative continuation (until day 2 after surgery) of empagliflozin 10 mg daily (10 days total).

Contactpersonen

Publiek

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Wetenschappelijk

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

• 18 to 90 years old (inclusive)
• Undergoing elective cardiac surgery with cardio-pulmonary bypass.
• Providing informed consent

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

• Current treatment with SGLT2 inhibitors.
• Diabetes Mellitus Type 1
• BMI<25 for people with type 2 diabetes
• Reduced renal function at baseline with eGFR < 30 ml/min.
• Systolic blood pressure < 100 mmHg at time of inclusion.
• Emergency surgery, defined as in need of surgery for medical reasons < 7 days, i.e. “S1-4” according to the Amsterdam UMC classification.
• Female of child-bearing potential who is pregnant, breast-feeding or intend to become pregnant or is not using adequate contraceptive methods.
• Known or suspected allergy to trial products or other drugs in the same class.

Onderzoeksopzet

Opzet

Type:	Interventie onderzoek
Onderzoeksmodel:	Parallel
Toewijzing:	Gerandomiseerd
Blindering:	Open / niet geblindeerd
Controle:	Actieve controle groep

Deelname

Nederland

Status:	Werving nog niet gestart
(Verwachte) startdatum:	01-09-2021
Aantal proefpersonen:	80
Type:	Verwachte startdatum

Voornemen beschikbaar stellen Individuele Patiënten Data (IPD)

Wordt de data na het onderzoek gedeeld: Nee

Ethische beoordeling

Positief advies

Datum:	20-06-2021
Soort:	Eerste indiening

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

Geen registraties gevonden.

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL9561
Ander register	METC AMC : 2021_162#B2021547

Resultaten