perioperative intravenous insulin, GIK and GLP-1 treatment in diabetes mellitus

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Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Glucose metabolism disorders (incl diabetes mellitus)
Study type	Interventional

Summary

ID

NL-OMON43712

Source
ToetsingOnline

Brief title
PILGRIM

Condition

- Glucose metabolism disorders (incl diabetes mellitus)
- Gastrointestinal therapeutic procedures

Synonym
diabetes mellitus

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum
Source(s) of monetary or material Support: Ministerie van OC&W,ESFD

Intervention

Keyword: diabetes mellitus, management, perioperative

Outcome measures

Primary outcome

The difference in median glucose between the GIK + BR and LG group 1 hour after surgery

Secondary outcome

* The difference in insulin administration during the trail between the GIK, BR and LG group

* The difference in median glucose between the GIK, BR and LG group 1 hour, 4 hours and 1 day after surgery

* The difference in proportion of any postoperative complication within the first month.

* The occurrence of mild and severe hypoglycaemia (glucose <4.0 mmol/l and <2.3 mmol/l, respectively)

* The occurrence of hypokalemia (<3.5 mmol/l) and hyperkalemia (>5.0 mmol/l)

Study description

Background summary

Diabetes mellitus is associated with poor outcome after surgery. The prevalence of diabetes in hospitalised patients is up to 40%, meaning that the anesthesiologist will encounter a diabetic patient in the operating room on a daily basis. Multiple protocols for perioperative glucose regulation have been developed, ranging from intravenous glucose-insulin-potassium infusion to subcutaneous bolus regimens. Despite this abundance of published glucose lowering protocols and the proven negative effects of intraoperative hyperglycaemia in diabetes, there

is no evidence regarding the optimal intraoperative glucose lowering treatment. Recently, incretins have been introduced to lower blood glucose. The main hormone of the incretin system is glucagon-like peptide*1 (GLP-1). GLP-1 increases insulin and decreases glucagon secretion in a glucose-dependent manner, resulting in low incidence of hypoglycemia. This study investigates for the first time the optimal intraoperative treatment algorithm to lower glucose in patients with diabetes mellitus undergoing non-cardiac surgery.

Study objective

This study investigates the optimal intraoperative treatment algorithm to lower glucose in patients with diabetes mellitus type 2 undergoing non-cardiac surgery, comparing intraoperative glucose-insulin-potassium infusion, insulin bolus regimen and GPL-1 (liragludite) treatment.

Study design

Randomised Controled Trial

Intervention

Before hospitalisation patients will be informed about the study. Informed consent will be obtained the day before surgery. The participants will be randomized to one of the three treatment groups: glucose-insulin-potassium (GIK) group, bolus regimen group (BR) and the liraglutide group (LG). Subjects randomised to the GIK group will receive a GIK infusion, and according to glucose measurements a bolus insulin iv will be given according to the algorithm of the BR group. For subjects in the BR group glucose will be adjusted with boluses of insulin according to the algorithm. The subjects in the LG group will receive 0,6mg liraglutide s.c. Treatment will be continued with 1,2 mg liraglutide on the day of surgery. Glucose will be adjusted with boluses of insulin according to the algorithm of BR. In all three groups, glucose will be measured every 60 minutes starting 30 minutes prior to surgery until discharge from the recovery .

Study burden and risks

Prior to surgery, HbA1C, potassium and starving glucose will be obtained. One hour, 4 hours and 1 day postoperative blood glucose and potassium will be measured in whole venous blood. Furthermore, prior to surgery and 4 hours after surgery, one heparine, EDTA and citrate tube will be obtained for back-up determinations. A total of 50 ml blood will be drawn for study purposus. Only if the recovery stay exceeds 3 hours, extra glucose monitoring will be done via fingerprick or blood withdrawal from existing arterial line. The glucose monitoring during surgery and the first two hours postoperative is standerd care.

Common adverse events with liraglutide treatment are related to the gastrointestinal system, nausea and diarrhoea as reported most frequently. Other adverse events include upper respiratory tract infections and headache. All adverse events are mostly mild and the drop-out rate from clinical trials due to adverse events has been low. Using blood glucose lowering agents, like insulin and GLP-1 receptor agonists, there is always a risk of hypoglycaemia. There will be extensive monitoring to prevent this adverse event. A possible benefit is a better glycemic control during surgery and maybe a reduction in postoperative complications.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

* Signed informed consent

* known diabetes mellitus type II for > 3 months
* aged 18-75 years
* scheduled for elective non-cardiac surgery

Exclusion criteria

* Oral corticosteroid use
- Insulin dose > 1IE/kg/day
* Planned for day-care (ambulant) surgery
* Planned ICU stay post-operatively
* History of chronic pancreatitis or idiopathic acute pancreatitis
* Impaired renal function defined as serum-creatinine * 133 *mol/L for males and * 115 *mol/L for females
* Females of child bearing potential who are pregnant, breast-feeding or intend to become pregnant or are not using adequate contraceptive methods (adequate contraceptive measures as required by local law or practice)
* Known or suspected allergy to trial product(s) or related products
* Any condition that the local investigator feels would interfere with trial participation or the evaluation of results
Planned bowel surgery

Study design

Design

Study phase:	4
Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	17-02-2014
Enrollment:	150

Type:	Actual

Medical products/devices used

Product type:	Medicine
Brand name:	NovoRapid
Generic name:	Insulin Aspart
Registration:	Yes - NL intended use
Product type:	Medicine
Brand name:	Victoza
Generic name:	Liraglutide
Registration:	Yes - NL intended use

Ethics review

Approved WMO Date:	11-02-2013
Application type:	First submission
Review commission:	METC Amsterdam UMC
Approved WMO Date:	14-02-2014
Application type:	First submission
Review commission:	METC Amsterdam UMC
Approved WMO Date:	12-03-2014
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	21-04-2014
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	21-07-2014
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO	

Date:	16-09-2014
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	22-12-2015
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	08-02-2016
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	10-02-2016
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	18-04-2016
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	19-05-2016
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	05-08-2016
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	16-08-2016
Application type:	Amendment
Review commission:	METC Amsterdam UMC

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
EudraCT	EUCTR2012-005291-34-NL
ClinicalTrials.gov	NCT02036372
CCMO	NL41467.018.12