A glucagon challenge in healthy volunteers

Published: 02-05-2007
Last updated: 08-05-2024

- To study the response of active glucagon-like peptide-1 (GLP1), Glucagon, Insulin, C-peptide and growth hormone (GH) and liver gluconeogenesis to a glucagon challenge in healthy volunteers- To study the expression of glucagon receptor mRNA in the...

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

Summary

ID

NL-OMON31110

Source
ToetsingOnline

Brief title
A glucagon challenge in healthy volunteers

Condition

- Glucose metabolism disorders (incl diabetes mellitus)

Synonym
Diabetes

Research involving
Human

Sponsors and support

Primary sponsor: Centre for Human Drug Research
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Diabetes, Methodology

Outcome measures

Primary outcome

Serum concentrations of (labelled)glucose, glucagon, insulin, C-peptide, GH and active GLP1, glucose levels with a continuous glucose monitoring device, calculation of hepatic glucose production and expression of glucagon receptor mRNA.

Secondary outcome

Tolerability of biopsies, glucose monitoring and glucagon challenge

Study description

Background summary

A hyperglucagonemic hyperglycemic test or glucagon challenge has been performed to assess hepatic glucose production. The challenge can be used as a tool to assess the anti-glucagonaemic effect of a pharmacological or dietary intervention. Another validated tool to assess these effects is to measure cell surface glucagon receptor density or glucagon receptor mRNA levels in subcutaneous fat cells.
However, the glucagon challenge has been described only once in literature and experience needs to be build. Moreover, fat biopsies have been predominantly performed in abdominal tissue and direct comparison with other sites is missing. This is potentially problematic as abdominal subcutaneous administration of drugs is commonly used and assessment of drug effects in abdominal subcutaneous fat tissue may yield erroneous results. This may be circumvented by using alternative locations to obtain fat tissue, i.e. biopsies from the dorsal gluteal area.
In addition, continuous glucose monitoring has become available for application in diabetes patients. However, this remains an unvalidated tool in healthy volunteers

Study objective

- To study the response of active glucagon-like peptide-1 (GLP1), Glucagon, Insulin, C-peptide and growth hormone (GH) and liver gluconeogenesis to a glucagon challenge in healthy volunteers
- To study the expression of glucagon receptor mRNA in the abdominal and dorsal fat cell.
- To assess the quality of continuous glucose monitoring in comparison with plasma and capillary blood glucose determination in healthy volunteers
- To assess tolerability of abdominal and dorsal fat biopsies, a glucagon challenge and continuous glucose monitoring

Study design

Non-randomized, prospective, intervention and response study

Study burden and risks

In this short study of approximately 26 hours measurements are spread over the occassion. The fat biopsies are performed on the evening before the glucagon challange.
Especially during the glucagon challange the number of measurements is extensive. Subjects will be asked to stay in bed for five hours.

The glucagon challenge has been performed before. In this previous study a longer challange was used (with similar doasage regimes) and no adverse events occured. We expect no problems with regard to the burden fand risk of participation.

Contacts

Public
Centre for Human Drug Research

Zernikedreef 10
2333 CL Leiden
Nederland
Scientific
Centre for Human Drug Research

Zernikedreef 10
2333 CL Leiden
Nederland

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

- Able and willing to provide written informed consent
- Age 18 to 65 years
- Males or females

Exclusion criteria

- Clinically significant abnormalities in medical history, physical examination or laboratory examination
- Pregnanant or breast feeding females
- Not able or willing to use an acceptable contraceptive method for study duration for females (hormonal contraceptives, intra-uterine device or condom/pessary)
- Not able and willing to refrain from smoking and/or xanthine use on study day
- Fasting plasma glucose at screening >= 6.4
- HbA1C >= 7%
- BMI >= 30 kg/m2
- Hypertension (systolic blood pressure >= 140 mm Hg or a diastolic blood pressure >= 95 mm Hg)
- Suspicion of a pheochromocytoma (i.e. Rapid heart rate, palpitations, excessive sweating, chest pain, upper abdominal pain, severe headaches, tremors, feeling of anxiety or extreme fright, pale skin)
- Positive urine testing for cocaine, opiates (morphine) and/or THC at screening
- Use of concomitant medication (except hormonal contraceptives)
- Positive test result for HIV, hepatitis B virus, and/or hepatitis C virus
- History of alcohol or drug abuse
- Undergoing or have undergone treatment with another investigational drug, biologic agent or device within 90 days prior to Screening.
- Blood donation within three months of screening

Study design

Design

Study type: Observational invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	10-07-2007
Enrollment:	8
Type:	Actual

Medical products/devices used

Generic name:	Guardian RT continuous monitoring device
Registration:	Yes - CE intended use
Product type:	Medicine
Brand name:	Actrapid
Generic name:	Insulin
Registration:	Yes - NL intended use
Product type:	Medicine
Brand name:	GlucaGen
Generic name:	Glucagon
Registration:	Yes - NL intended use
Product type:	Medicine
Brand name:	Somatostatine-UCB
Generic name:	Somatostatine
Registration:	Yes - NL intended use

Ethics review

Approved WMO Date:	02-05-2007
Application type:	First submission
Review commission:	METC Leids Universitair Medisch Centrum (Leiden)
Approved WMO Date:	29-06-2007
Application type:	Amendment
Review commission:	METC Leids Universitair Medisch Centrum (Leiden)

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	EUCTR2007-002215-30-NL
Other	na
CCMO	NL17672.058.07