Regulation of adipose tissue oxygen tension by adipose tissue blood flow.

No registrations found.

Ethical review	Positive opinion
Status	Recruiting
Health condition type	-
Study type	Observational non invasive

Summary

ID

NL-OMON28187

Source
NTR

Brief title
Hypoxia study

Health condition

Diabetes Mellitus, Insulin resistance, Adipose tissue blood flow, Adipose tissue hypoxia

Sponsors and support

Primary sponsor: Maastricht university Medical Centre+ (NUTRIM)
Source(s) of monetary or material Support: Dutch Diabetes Research Foundation (Innovative Pilot Research Grant, Dr. G.H. Goossens)

Intervention

Outcome measures

Primary outcome

Primary outcoem parameters are adipose tissue blood flow and adipose tissue oxygen tension.

Secondary outcome

Secondary outcoem parameters are insulin sensitivity, gene expression and adipocyte size.

Study description

Background summary

Increasing evidence suggests that adipose tissue dysfunction plays a prominent role in the development of insulin resistance and type 2 diabetes mellitus. One aspect of adipose tissue dysfunction is an impaired adipose tissue blood flow (ATBF). We and others have demonstrated that ATBF is decreased in obese and type 2 diabetic subjects. It is tempting to speculate that adipose tissue hypoperfusion may induce hypoxia in this tissue, which in turn may contribute to insulin resistance via induction of adipose tissue inflammation.

Study objective

A decreased adipose tissue blood flow results in adipose tissue hypoxia, which in turn may contribute to the development of insulin resistance.

Study design

In this cross-section study, blood samples are collected during the clamp (every 5min) and during the oxygen tension measurements (during the OGTT at time-points t0, t10, t20, t30, t60, t90 and t120).

Intervention

Adipose tissue oxygen tension will be measured using an optochemical measurement system for the continuous monitoring of oxygen tension in vivo in humans using microdialysis. Adipose tissue oxygen tension will be mreasured during pharmacological (local angiotensin II and isoprenaline administration) and physiological (a standardized 75g oral glucose tolerance test (OGTT)) manipulation of adipose tissue blood flow. Insulin sensitivity will be assessed during a hyperinsulinemic-euglycemic clamp. An adipose tissue biopsy and blood samples will be taken under fasting (baseline) conditions and at several time-point during the protocol (e.g. during local administration of pharmacological agents and during the OGTT).

Contacts

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Eligibility criteria

Inclusion criteria

1. Male sex;

2. BMI < 25 kg/m2;

3. Age 25-70 yrs;

4. Weigth stable for at least 3 months prior to participation;

5. Normal glucose tolerant (NGT);

6. No family history of type 2 diabetes mellitus (first degree).

Exclusion criteria

1. Diabetes mellitus;

2. Cardiovascular disease;

3. Cancer;

4. Asthma or bronchitis;

5. Liver or kidney malfunction;

6. Disease with a life expectancy shorter then 5 years;

7. Abuse of products (alcohol consumption > 15 units/week);

8. Plans to lose weight;

9. Use of high doses of anti-oxidant vitamins;

10. Use of any medication that influences glucose metabolism and/or inflammation.

Study design

Design

Study type:	Observational non invasive
Intervention model:	Parallel
Allocation:	Non controlled trial
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	17-06-2009
Enrollment:	20
Type:	Anticipated

Ethics review

Positive opinion

Date:	02-08-2010
Application type:	First submission

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
NTR-new	NL2345
NTR-old	NTR2451
Other	METC Maastricht University Medical Centre : MEC 09-3-014
ISRCTN	ISRCTN wordt niet meer aangevraagd.

Study results

Summary results
N/A