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

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

Ethische beoordeling	Positief advies
Status	Werving gestart
Type aandoening	-
Onderzoekstype	Observationeel onderzoek, zonder invasieve metingen

Samenvatting

ID

NL-OMON28187

Bron
NTR

Verkorte titel
Hypoxia study

Aandoening

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

Ondersteuning

Primaire sponsor: Maastricht university Medical Centre+ (NUTRIM)
Overige ondersteuning: Dutch Diabetes Research Foundation (Innovative Pilot Research Grant, Dr. G.H. Goossens)

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

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

Toelichting onderzoek

Achtergrond van het onderzoek

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.

Doel van het onderzoek

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

Onderzoeksopzet

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).

Onderzoeksproduct en/of interventie

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).

Contactpersonen

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Wetenschappelijk

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

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).

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

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.

Onderzoeksopzet

Opzet

Type:	Observationeel onderzoek, zonder invasieve metingen
Onderzoeksmodel:	Parallel
Toewijzing:	N.v.t. / één studie arm
Blindering:	Open / niet geblindeerd
Controle:	N.v.t. / onbekend

Deelname

Nederland

Status:	Werving gestart
(Verwachte) startdatum:	17-06-2009
Aantal proefpersonen:	20
Type:	Verwachte startdatum

Ethische beoordeling

Positief advies

Datum:	02-08-2010
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	NL2345
NTR-old	NTR2451
Ander register	METC Maastricht University Medical Centre : MEC 09-3-014
ISRCTN	ISRCTN wordt niet meer aangevraagd.

Resultaten

Samenvatting resultaten
N/A