The pleiotropic metabolic effects of bariatric surgery.

No registrations found.

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

Summary

ID

NL-OMON29450

Source
Nationaal Trial Register

Brief title
Bariatric surgery and metabolism

Health condition

obesity
insulin sensitivity
bariatric surgery
hypothalamus

obesitas
insuline gevoeligheid
bariatrische chirurgie
hypothalamus

Sponsors and support

Primary sponsor: Academic Medical Center (AMC), Department of Endocrinology and Metabolism
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Source(s) of monetary or material Support: fund=initiator=sponsor

Intervention

Outcome measures

Primary outcome

- insulin sensitivity

- metabolic changes pre- post operative

- metabolic differences between two subgroups

- changes in hypothalamus pre- post operative

- brain differences between two subgroups

Secondary outcome

- weight loss

Study description

Background summary

In summary, unraveling the association between obesity and disturbances in lipid and glucose metabolism is necessary to improve future treatment modalities. The relationship between the increase in fat mass and the metabolic perturbations is complex and probably depends on the nature of the adaptive response to the hypercaloric milieu. The origin of these adaptations is most likely regulated centrally by several areas in the brain, including the hypothalamus, the prefrontal cortex and the satiety/rewarding centers of the brain. Differences in these adaptations may explain the different phenotypes of obesity in terms of disturbances in nutrient-related pathways. Therefore, studying adipose tissue biology and functional brain characteristics in the two extreme phenotypes of obesity (the metabolically healthy but obese vs. the metabollicaly abnormal and obese) will give insight in the role of adipose tissue and the brain in the switch from the metabolically healthy state to the unhealthy state.

Secondly, bariatric surgery is the only effective way to induce sustained weight loss and reversal of the obesity-induced changes in lipid and glucose metabolism.
Very early metabolic effects have been reported before the occurrence of weight loss, suggesting an acute effect of the surgery itself, i.e. bypassing the nutrient flow from the

proximal gastrointestinal tract, on metabolism. Since the traditional factors known to be involved in glucose and metabolism do not change so quickly, other factors are involved. The current hypothesis is a reduced secretion of anti-incretin factors from the gut, but these factors have not been identified yet. An alternative explanation may be a quick central response, possibly mediated by this change in the incretin/anti-incretin balance, resulting in a centrally orchestrated amelioration of glucose and lipid metabolism.

Study objective

1. The phenotypic difference between metabolically healthy but obese and metabolically unhealthy obese subjects is explained by:

a. differences in the neuroadaptation to the hypercaloric milieu, i.e. differences in dopamine receptor binding capacity in the area of the hypothalamus and striatal reward system, leading to differences in dopaminergic effects on insulin sensitivity and VLDL production

b. or structural differences within adipose tissue, with the main differences being related to inflammatory changes within adipose tissue.

2. The acute effects of malabsorptive bariatric surgery on glucose and lipid metabolism are mediated via (or associated with) changes of the activity pattern of the hypothalamus together with increased local striatal dopamine D2-receptor availability. This is accompanied by a near normalization of secretion of gut petides.

Study design

4 weeks pre-surgery

2-weeks post-surgery

5-weeks post-surgery

6-months post-surgery

Intervention

Bariatric surgery

Contacts

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Eligibility criteria

Inclusion criteria

1. 20 pre-menopausal Caucasian women scheduled for Roux-en-Y gastric bypass surgery

2. Written informed consent

Exclusion criteria

1. Any chronical medical condition except for glucose intolerance, hypertension and secondary dyslipidemia

2. Use of medication which interferes with dopamine metabolism

3. Clinically overt atherosclerotic events

4. Claustrophobia and no unremovable metal objects

5. Tobacco use (i.e. smokers)

6. Malignant or uncontrolled hypertension (blood pressure >200/120 mmHg or blood pressure >180/110 mmHg with 1 or more drugs, or >160/100 with 2 or more drugs)

7. Unwilling or unable to provide informed consent

Study design

Design

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

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	01-01-2009
Enrollment:	20
Type:	Anticipated

Ethics review

Positive opinion

Date:	19-11-2008
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	NL1478
NTR-old	NTR1548
Other	: 08/161
ISRCTN	ISRCTN wordt niet meer aangevraagd

Study results

Summary results
N/A