Effects of FASTING the brain

No registrations found.

Ethical review	Positive opinion
Status	Recruiting
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON21776

Source
Nationaal Trial Register

Brief title
FASTING

Health condition

Fasting

Obesity

Sponsors and support

Primary sponsor: Academic Medical Center (AMC), Amsterdam
Source(s) of monetary or material Support: Academic Medical Center (AMC), Amsterdam

Intervention

Outcome measures

Primary outcome

Serotonin and dopamine transporter availability: [123I]FP-CIT SPECT scan

Secondary outcome

- Circulating hormones and substrates: venous blood drawing

- REE: indirect calorimetry

- Feeding behavior: validated questionnaires

Study description

Background summary

Rationale: Feeding behaviour is regulated by a complex interplay of the homeostatic and hedonic systems, and is influenced by peripheral inputs. The neurotransmitters serotonin and dopamine have major roles in the cerebral regulation of feeding behaviour by mediating anorexigenic and rewarding signals, respectively. Extracellular levels of serotonin and dopamine are regulated by serotonin and dopamine transporters (SERT and DAT) respectively and they can be visualized using SPECT.

In obesity, control of food intake is disturbed, resulting in overconsumption of high-calorie nutrients. Therefore, the role of the central nervous system, and serotonin and dopamine in particular, in the current obesity epidemic is an active interest of ongoing research worldwide.
Fasting influences neural signals and hormones that provide input to the central regulation of food intake. Studying the effects of fasting on brain areas involved in overeating/obesity, as well as differences in the response to fasting between lean and obese individuals, may unravel novel therapeutic targets for (the prevention of) obesity. In addition, since it is currently unknown how fasting affects central SERT and DAT, interpretation of previous studies that investigate effects of lifestyle, diet and/or metabolic challenges on cerebral serotonin and dopamine in humans is troublesome because these studies vary in fasting duration prior to the measurement of cerebral SERT and DAT availability.

Study objective

We hypothesize that 1) fasting duration may affect the central serotonin and dopamine systems, either centrally or indirectly through effects on peripheral input to the central nervous system, and 2) the effect of fasting may be changed in obesity.

Study design

2 SPECT scan study days: one preceded by 12 hours of fasting, the other by 24 hours of fasting

Intervention

Fasting intervention: participants will undergo [123I]FP-CIT SPECT scans on two study days,

prior to one study day participants will fast for 12 hours, prior to the other study day participants will fast for 24 hours.

Diet intervention: prior to each fasting intervention, participants will consume an eucaloric diet for 72 hours. Eucaloric enery requirements are based on resting energy expenditure measured with indirect calorimetry.

Contacts

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Eligibility criteria

Inclusion criteria

- Male

- BMI<25kg/m2 (lean subjects) or BMI ¡Ý 30kg/m2 (obese subjects)

- Age 50-75 years

- Stable weight three months prior to study inclusion

Exclusion criteria

- Use of any medication except for those related to treatment of components of the metabolic syndrome

- Use of exogenous insulin, oral glucose lowering drugs, beta-blockers

- Any actual medical condition except for treated hypothyroidism and the metabolic

syndrome

- History of any psychiatric disorder

- Shift work

- Irregular sleep pattern

- Intensive sports (>3 h/week)

- Restrained eaters

- History of eating disorders (anorexia, binge eating, bulimia)

- Smoking, XTC, amphetamine or cocaine abuse

- Alcohol abuse (>3 units/day)

- Lactose intolerance

- Estimated glomerular filtration rate <60 ml/min

- Contraindication to MRI scanning (claustrophobia, metal foreign objects)

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Allocation:	Randomized controlled trial
Masking:	Double blinded (masking used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	13-03-2017
Enrollment:	20
Type:	Anticipated

Ethics review

Positive opinion

Date:	20-07-2017
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	NL6267
NTR-old	NTR6609
Other	METC AMC : METC2016_315

Study results