Effects of FASTING the brain

Gepubliceerd: 20-07-2017 Laatst bijgewerkt: 13-12-2022

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.

Ethische beoordeling	Positief advies
Status	Werving gestart
Type aandoening	-
Onderzoekstype	Interventie onderzoek

Samenvatting

ID

NL-OMON21776

Bron
Nationaal Trial Register

Verkorte titel
FASTING

Aandoening

Fasting

Obesity

Ondersteuning

Primaire sponsor: Academic Medical Center (AMC), Amsterdam
Overige ondersteuning: Academic Medical Center (AMC), Amsterdam

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

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

Toelichting onderzoek

Achtergrond van het onderzoek

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.

Doel van het onderzoek

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.

Onderzoeksopzet

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

Onderzoeksproduct en/of interventie

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.

Contactpersonen

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

- 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

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

- 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)

Onderzoeksopzet

Opzet

Type:	Interventie onderzoek
Onderzoeksmodel:	Cross-over
Toewijzing:	Gerandomiseerd
Blindering:	Dubbelblind
Controle:	N.v.t. / onbekend

Deelname

Nederland

Status:	Werving gestart
(Verwachte) startdatum:	13-03-2017
Aantal proefpersonen:	20
Type:	Verwachte startdatum

Ethische beoordeling

Positief advies

Datum:	20-07-2017
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	NL6267
NTR-old	NTR6609
Ander register	METC AMC : METC2016_315

Resultaten