Effect of Iron Deficiency on skeletal muscle metabolism in HFpEF

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We hypothesize that ID is an important factor in the limitation of exercise capacity in HFpEF. Systemic low-grade inflammation does not only lead to microvascular dysfunction but also to iron deficiency. Iron deficiency has a direct effect on the...

Ethische beoordeling	Niet van toepassing
Status	Werving nog niet gestart
Type aandoening	-
Onderzoekstype	Observationeel onderzoek, zonder invasieve metingen

Samenvatting

ID

NL-OMON20027

Bron
NTR

Verkorte titel
Iron muscle

Aandoening

Diabetes, obesity and hypertension, all highly present comorbidities in HFpEF, seem to drive this disease by inducing low-grade systemic inflammation which in turn induces microvascular dysfunction and activates a cascade of events. Several studies have demonstrated that HFpEF is a systemic disease that affects not only cardiac, but also peripheral muscle energy metabolism. Iron deficiency (ID) could be an important contributor in this pathophysiological process.
Iron deficiency is present in 50% of chronic HF patients. Although HFpEF was not excluded from these cohort studies, it mainly included HF with reduced ejection fraction (HFrEF).

Ondersteuning

Primaire sponsor: Not aplicable
Overige ondersteuning: Not aplicable

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

- Is skeletal muscle metabolism impaired in HFpEF patients with iron deficiency, measured using CMR spectroscopy?

Toelichting onderzoek

Achtergrond van het onderzoek

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We hypothesize that ID is an important factor in the limitation of exercise capacity in HFpEF. Systemic low-grade inflammation does not only lead to microvascular dysfunction but also to iron deficiency. Iron deficiency has a direct effect on the muscle. Not only on the cardiac muscle but also the skeletal muscle is affected, impairing muscle contraction strength but also energy metabolism. The primary focus of this study will be delivering proof that the alterations in the muscle are more severe in HFpEF patients with ID compared to without ID.

Doel van het onderzoek

We hypothesize that ID is an important factor in the limitation of exercise capacity in HFpEF. Systemic low-grade inflammation does not only lead to microvascular dysfunction but also to iron deficiency. Iron deficiency has a direct effect on the muscle. Not only on the cardiac muscle but also the skeletal muscle is affected, impairing muscle contraction strength but also energy metabolism. The primary focus of this study will be delivering proof that the alterations in the muscle are more severe in HFpEF patients with ID compared to without ID.

Onderzoeksopzet

Not aplicable

Onderzoeksproduct en/of interventie

o Measurement of PCR recovery time using MR spectroscopy

- Microvascular function

o Glycocalyx thickness (um)

o Heat induced hyperaemic response (% skin hyperaemic response)

- Exercise tolerance

o 6 minute walk test distance (m)

o maximum exercise capacity (METs on exercise test)

Contactpersonen

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

• HFpEF: according to the ESC guidelines

(1) Signs and/or symptoms of heart failure,

(2) LVEF ≥ 50%,

(3) Elevated levels of natriuretic peptide (NT-proBNP > 125 pg/ml
~ 15 pmol/L)

(4) one of the following additional criteria

a) Relevant structural heart disease; LV hypertrophy, (LVmass index > 95 g/m2 in women, or >115 g/m2 in men) and/or LA enlargement (LA volume index >34 l/m2)

b) Diastolic dysfunction (E/e' ≥ 13, mean e' septal and lateral wall < 9 cm/s)

• Iron deficiency: serum ferritin < 100 µg/L or serum ferritin between 100-299 µg/L in combination with a transferrin saturation < 20%.

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

A potential subject who meets any of the following criteria will be excluded from participation in this study:

- Reproductive age women

- Any iron supplement (oral, iv) during the last 6 months prior to inclusion

- Any chemotherapy in last year

- Significant peripheral artery disease

- Contraindication for CMR

Onderzoeksopzet

Opzet

Type:	Observationeel onderzoek, zonder invasieve metingen
Onderzoeksmodel:	Parallel
Toewijzing:	Niet-gerandomiseerd
Blindering:	Open / niet geblindeerd
Controle:	N.v.t. / onbekend

Deelname

Nederland

Status:	Werving nog niet gestart
(Verwachte) startdatum:	01-09-2018
Aantal proefpersonen:	79
Type:	Verwachte startdatum

Ethische beoordeling

Niet van toepassing

Soort:	Niet van toepassing

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

ID: 55673
Bron: ToetsingOnline
Titel:

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL7059
NTR-old	NTR7297

Register	ID
CCMO	NL65600.068.18
OMON	NL-OMON55673

Resultaten

Samenvatting resultaten
Not aplicable