TwinLife: TWIN Longitudinal Investigation of FEtal discordance

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

Samenvatting

ID

NL-OMON22667

Bron
NTR

Verkorte titel
TwinLife

Aandoening

Monochorionic twin pregnancies

Ondersteuning

Primaire sponsor: The Dutch Heart Foundation
Overige ondersteuning: The Dutch Heart Foundation

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

1. Percentage difference in DNA methylation in MSCs at birth within MC twin pairs in relation to measures of intra-uterine discordance: percentage difference in birthweight and

percentage difference in placenta share.
2. Within-twin pair differences at follow-up in childhood (2, 5, 8 years) with respect to risk of CVD and NDI as explained by the DNA methylation differences at birth. Study parameters of CVD at follow-up: cardiac load reflected by left-ventricular mass, vascular stiffness reflected by aortic pulse-wave velocity

Toelichting onderzoek

Achtergrond van het onderzoek

Lifelong health is in part set during intrauterine life. An adverse intrauterine environment can induce persistent epigenetic changes that are thought to cause long-term health effects. There is an urgent need for human studies that can identify the epigenetic alterations that underlie the impact of intrauterine adversity on disease, in particular cardiovascular disease (CVD) and neurodevelopmental impairment (NDI). This study will focus on identical twin pairs who shared a single placenta i.e., monochorionic (MC) twins. Every year, over 600 MC twins are born in The Netherlands and they are at high risk of experiencing an adverse intrauterine environment. In one third of pairs, one fetus has significantly less access to nutrients and resources during pregnancy than its co-twin, conditions known to be linked to increased CVD risk and impaired neurodevelopment in adults. Thus, although genetically identical, great differences in intrauterine exposure exist within twin pairs, providing an unique natural experiment allowing a robust assessment of the development of cardiac- and neurodevelopmental risk factors in childhood and probe the underlying epigenetic mechanisms. Instead of relying on commonly used blood samples, this study will examine altered epigenetic regulation in mesenchymal stromal cells (MSCs), an enhanced proxy for other tissues involved in CVD and NDI. These multipotent cells are known to display metabolic changes in newborns exposed to an adverse intrauterine environment and can be differentiated into other cell types. The hypothesis is that twins discordant for pregnancy complications display a distinct epigenetic signature in MSCs. This signature contributes to cellular metabolic alterations and is associated with future cardiovascular and neurodevelopmental outcome in childhood and beyond. Our results will not only address an unmet clinical need in the high-risk group of MC twins, but may also advance early-life CVD prevention strategies and underpin their efficacy in the general population.

Doel van het onderzoek

The hypothesis is that twins discordant for pregnancy complications display a distinct epigenetic signature in MSCs. This signature contributes to cellular metabolic alterations and is associated with future cardiovascular and neurodevelopmental outcome in childhood and beyond.

Onderzoeksopzet

Prenatal; birth; 6 months; follow-up at 2, 5 and 8 years

Contactpersonen

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Wetenschappelijk

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

- MC twin pregnancies
- Parents aged ≥ 18 years, who are able to consent
- Written informed consent from both parents to participate in this longitudinal study

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

- The presence of major anatomical abnormalities
- Triplet pregnancies or higher order multiple pregnancies
- Twin reversed arterial perfusion (TRAP)
- MC twins with single or double fetal demise

Onderzoeksopzet

Opzet

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

Deelname

Nederland

Status:	Werving gestart
(Verwachte) startdatum:	25-01-2019
Aantal proefpersonen:	200
Type:	Verwachte startdatum

Voornemen beschikbaar stellen Individuele Patiënten Data (IPD)

Wordt de data na het onderzoek gedeeld: Nog niet bepaald

Ethische beoordeling

Positief advies

Datum:	22-02-2019
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	NL7538
Ander register	METC LUMC : P18.184

Resultaten