The application of induced pluripotent stem cells to predict return of the same kidney disease after transplantation.

Published: 22-08-2019
Last updated: 10-04-2024

Development of a predictive test for r-FSGS at the individual level of a patient and kidney donor with FSGS.

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Nephropathies
Study type	Observational non invasive

Summary

ID

NL-OMON48161

Source
ToetsingOnline

Brief title
A cross-match to predict FSGS recurrence after kidney transplantation.

Condition

- Nephropathies

Synonym
focal segmental glomerulosclerosis, nephrotic syndrome

Research involving
Human

Sponsors and support

Primary sponsor: Radboud Universitair Medisch Centrum
Source(s) of monetary or material Support: Ministerie van OC&W,ZonMw

Intervention

Keyword: focal segmental, glomerulosclerosis, induced pluripotent stem cells, podocytes, recurrence

Outcome measures

Primary outcome

Main outcome is the proportion of assay results that correctly reflect clinical outcome of r-FSGS (podocyte damage in r-FSGS; no podocyte damage in non r-FSGS). Main outcome will be based on podocyte damage according to chosen assays to demonstate podocyte damage caused by FSGS patient plasma. Results will be linked to the clinical data of the patients in the pre-specified groups of r-FSGS and non r-FSGS. Podocyte damage caused by FSGS patient plasma will be assessed in comparison with control plasma (from kidney donors).

Secondary outcome

Secondary outcome measures:

1. the response of induced patient podocytes to blood plasma of the same patient (positive control);

2. the response of induced patient and donor podocytes to blood plasma of the kidney donor (negative controls);

3. if the primary outcome is favorable, the response of other donor and patient podocytes to FSGS patient plasma will be evaluated.

Study description

Background summary

Focal segmental glomerulosclerosis (FSGS) is a kidney disease that manifests

with heavy protein leakage to the urine. The main histological feature is damage to podocytes, which are specialized epithelial cells of the kidney filtering organs (glomeruli). FSGS often leads to loss of kidney function, and recurs within days after transplantation in approximately 50% of patients. Clinical and experimental observations suggest that a circulating factor causing podocyte damage is involved in the pathogenesis of post-transplant FSGS recurrence (r-FSGS). However, the responsible factor has remained unidentified despite intense research. A highly predictive test/model for r-FSGS is urgently needed. The central hypothesis of this project is that the event of r-FSGS depends on interactions between patient plasma and donor podocytes. The project aims to develop an individualized test for r-FSGS. The proposed test model is based on evaluation of damage to induced kidney donor podocytes (derived from blood cells) by patient blood plasma. To demonstrate a proof of concept, we will include patient and donor pairs with known outcome after transplantation.

Study objective

Development of a predictive test for r-FSGS at the individual level of a patient and kidney donor with FSGS.

Study design

Experimental pilot study for development of a predictive assay for r-FSGS.

Study burden and risks

Burden and risks associated with participation are minimal. A single visit to the outpatient clinic is required to perform one single venipuncture. We will draw 40 mL of heparanized blood for peripheral blood mononuclear cells (PBMCs) reprogramming into iPSCs and plasma storage. No additional tests are required. Although the project is highly experimental, the benefit for patients will be potential development of a test that can be used to predict r-FSGS with a specific donor, or even avoidance of this risk by selection of a suited donor. The risk benefit ratio is therefore very acceptable.

Contacts

Public
Radboud Universitair Medisch Centrum

Geert Grooteplein Zuid 10
Nijmegen 6525GA
NL
Scientific

Radboud Universitair Medisch Centrum

Geert Grooteplein Zuid 10
Nijmegen 6525GA
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

Population:
1. Adult patients (18 years or older) with diagnosis of FSGS in the native kidneys, and known outcome after kidney transplantation (recurrent FSGS or non-recurrent FSGS).
2. Living persons who have previously donated a kidney to patients specified under 1.;Inclusion criteria
1. Established outcome after kidney transplantation (recurrence or non-recurrence of FSGS);
2. Living kidney donation;
3. Donor available for participation in the study

Exclusion criteria

1. Follow-up after transplantation too short to rule out development of late FSGS recurrence (less than one year);
2. Unknown histological diagnosis in the native kidney;
3. No communication between patient and donor.

Study design

Design

Study type: Observational non invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Basic science

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	28-10-2019
Enrollment:	10
Type:	Actual

Ethics review

Approved WMO

Date:	22-08-2019
Application type:	First submission
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)

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
CCMO	NL69759.091.19