The assessment of microvascular alterations in renal-pancreas transplant recipients before and after transplantation.

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Assessment of the effect of kidney-pancreas transplantation in diabetic nephropathy patients on microvascular alterations using orthogonal spectral polarization and correlate this effect with markers for endothelial cell dysfunction and fibrosis

Ethical review	Approved WMO
Status	Completed
Health condition type	Diabetic complications
Study type	Observational invasive

Summary

ID

NL-OMON33101

Source
ToetsingOnline

Brief title
OPS-2

Condition

- Diabetic complications
- Renal disorders (excl nephropathies)

Synonym
diabetic nephropathy, kidney-pancreas transplantation

Research involving
Human

Sponsors and support

Primary sponsor: Leids Universitair Medisch Centrum
Source(s) of monetary or material Support: afdeling nierziekte

Intervention

Keyword: diabetic nephropathy, kidney-pancreas transplantation, microvascular alterations

Outcome measures

Primary outcome

Non- invasive assessment of microvascular structure in diabetic nephropathy

patients before and after kidney-pancreas transplantation.

Secondary outcome

1.Does kidney-pancreas transplantation improve microvascular damage assessed by

OPS?

2.Does OPS correlate with serum and urine markers for fibrosis and endothelial

dysfunction in these patients?

Study description

Background summary

Diabetic nephropathy is currently one of the most serious complications of longstanding diabetes and has emerged as the most common cause of end-stage renal disease worldwide. A common feature of early-stage diabetic nephropathy is the development of albuminuria, which is associated with glomerular hypertrophy, thickening of glomerular basement membrane, and expansion of mesangial extracellular matrix. Advanced diabetic nephropathy is characterized by glomerulosclerosis, vascular and capillary loss, tubulointerstitial degeneration, and fibrosis that is associated with renal function impairment and substantial proteinuria. The loss of the microvasculature and endothelial damage correlates directly with the development of glomerular and tubulointerstitial scarring.
Considerable laboratory and clinical evidence indicates that endothelial dysfunction, due to hyperglycaemia induced oxidative stress, is a critical part

of the pathogenesis of microvascular and macrovascular complications in diabetes. It has been well described that these lesions can be largely prevented when control of blood sugar can be achieved . Combined kidney and pancreas transplantation is an effective treatment option for diabetic nephropathy aiming at insulin independency, long-term normoglycemia and amelioration of secondary complications related to chronic diabetes. Current 1-year patient and graft survival rates are 90% and 80%, respectively, and evidence is accumulating that improvements occur in microvascular and neuropathic complications as well.
To visualize the microvasculature, capillary microscopy was used to demonstrate that there is microvascluar capillary loss in nail fold, skin and conjunctiva in essential hypertension, diabetes mellitus, autoimmune rheumatic diseases and cardio vascular diseases Similarly, it was shown that the labial capillary density has increased in patients with systemic sclerosis and in smokers and nail fold capillary density has increased in treated hypertensive patients. Recently, orthogonal polarization spectral (OPS) imaging, which is a non invasive technique, has been used to visualize the human circulation in patients with sepsis and microvascular structure in many animal tissues. We expect that kidney-pancreas transplantation, which leads to normalization of glucose levels, will improve the microvascular damage visualized by OPS.

Study objective

Assessment of the effect of kidney-pancreas transplantation in diabetic nephropathy patients on microvascular alterations using orthogonal spectral polarization and correlate this effect with markers for endothelial cell dysfunction and fibrosis

Study design

The study is designed as a prospective observational pilot study. We will include patients who are on the waiting list for combined kidney-pancreas transplantation. Per year approximately 15 patients undergo combined kidney-pancreas transplantation at the LUMC.

Study burden and risks

Study visits for the patients will be planned at outpatient follow-up controls. The visits will take 1 hour extra for the OPS measurement.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

1. Age: 18 -70 years
2. Female or male
3. Kidney-pancreas transplantation
4. Patients must be able to adhere to the study visit schedule and protocol requirements.
5. Patients must be able to give informed consent and the consent must be obtained prior to any study procedure.

Exclusion criteria

1. Patients with evidence of active infection or abcesses
2. Patients suffering from hepatic failure.
3. Patients suffering from an active autoimmune disease
4. Patients with epilepsy
5. Malignancy (including lymphoproliferative disease) within the past 2-5 years (except for squamous or basal cell carcinoma of the skin that has been treated with no evidence of recurrence).
6. Subjects who currently have an active opportunistic infection (e.g., herpes zoster

[shingles], cytomegalovirus (CMV), Pneumocystis carinii (PCP), aspergillosis, histoplasmosis, or mycobacteria other than TB)

Study design

Design

Study type: Observational invasive

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

Recruitment

NL

Recruitment status:	Completed
Start date (anticipated):	23-03-2010
Enrollment:	15
Type:	Actual

Ethics review

Approved WMO

Date:	24-11-2009
Application type:	First submission
Review commission:	METC Leids Universitair Medisch Centrum (Leiden)

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	NL29226.058.09