Normothermic oxygenated kidney perfusion in elderly donors

Published: 29-11-2017
Last updated: 12-04-2024

The aim of this study is to evaluate logistic challenges of normothermic machine perfusion in transplant candidate allocated in the ESP

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Renal disorders (excl nephropathies)
Study type	Interventional

Summary

ID

NL-OMON44614

Source
ToetsingOnline

Brief title
POSEIDON study

Condition

- Renal disorders (excl nephropathies)

Synonym
chronic kidney failure, renal failure

Research involving
Human

Sponsors and support

Primary sponsor: Erasmus MC, Universitair Medisch Centrum Rotterdam
Source(s) of monetary or material Support: Stichting Coolsingel

Intervention

Keyword: delayed graft function, graft survival, kidney transplantation, perfusion

Outcome measures

Primary outcome

The primary outcome measure will be the logistic challenges in including patients and treatment with normothermic ex vivo kidney perfusion (e.g. failed perfusion procedures, renal artery or vein thrombosis, participation rate).

Secondary outcome

1. Renal histology at start and end of normothermic perfusion

2. Measured glomerular filtration rate * the best surrogate of graft function * (first 4 weeks, 3-months post-transplant), which is considered to be a predictor of long term kidney graft survival as well.

3. 3-month graft (censored and uncensored for recipient death) and patient survival

4. Incidence and severity of delayed graft function defined as the need for dialysis within the first 7 days after kidney transplantation and preceding the return of kidney function. *

5. Incidence of primary non-function (PNF) defined as the permanent lack of function of the graft from time of transplantation until months post-transplant. This endpoint is determined post-hoc at 3 months post-transplant. *

6. Biopsy proven acute rejection within 3 months post-transplant.

Study description

Background summary

Ageing of the European population has impact on various domains in health care, including renal insufficiency and kidney transplantation. In 1999 the Eurotransplant Senior Program (ESP) was launched to allocate kidneys from older (*65 years) deceased donors to older (*65 years) local or regional transplant candidates, to keep both ischemia and waiting times low and thereby improve the rate and outcome in elderly transplant recipients. Recently, the short and long-term graft and patient survival of the ESP was reported to be worse as compared to the outcome of the regular renal transplant program. Moreover, the 5-year mortality rate of elderly recipients of elderly kidneys is comparable to that of waitlisted elderly patients on dialysis, thereby demonstrating the limited success of the ESP.
Optimizing these older donor kidneys on machine perfusion may be a successful approach to improve the outcome. Compared to cold storage, hypothermic machine perfusion has shown a reduced risk of delayed graft function and improved graft survival in the first year after transplantation. Normothermic kidney perfusion is a relative novel technique that may recondition the kidney and restore renal function prior to transplantation. Clinical studies on marginal donors show that the technique is safe and suggest that early graft function may be improved. More-over, normothermic machine perfusion might lead to a better evaluation of the quality of the to-be-implanted organ.
Given the poor results of the ESP, we expect that especially this group of kidney recipient might benefit the most from an effort to improve organ quality by normothermic machine perfusion. To date, evidence from a randomized controlled to support the concept is not available and needed to legitimize the costly approach using machine perfusion and ex vivo manipulation.

Study objective

The aim of this study is to evaluate logistic challenges of normothermic machine perfusion in transplant candidate allocated in the ESP

Study design

Pilot study prior to a randomized controlled trial with including a total of 10 patients.

Intervention

At the Erasmus MC operating room complex, the donor kidney(s) will be unpacked under sterile conditions, benched to assess acceptability for transplantation. During the benching, 2 pre-defined biopsies from both poles of the kidney will be taken as baseline values to determine markers of kidney damage and aging. Hereafter, the kidney will be placed on to the normothermic organ perfusion machine. The kidney will be rinsed with 500 ml preservation solution and then pumped for two hours at 37 degrees Celsius with an oxygenated plasma-free red cell*based solution at a pressure of 75 mmHg. Nutrients, glucose, and

prostacyclin will be infused at a set rate to maintain homeostasis. During normothermic ex vivo kidney perfusion, the quality of each kidney will be assessed. The assessment will be based on the macroscopic appearance, the mean renal blood flow, the total amount of urine produced. After two hours of normothermic ex vivo kidney perfusion, the machine will be switched to hypothermic perfusion modus, gradually cooling down the donor kidney. After cooling down the kidney will be rinsed with 500 ml preservation solution and packed on cold storage.

Study burden and risks

Kidney transplantation will be performed by well-trained transplant surgeons. Hypothetically, the normothermic machine perfusion might fail, however during extensive testing no failures were observed. If a failure has been identified, we can quickly switch to cold storage. Therefore an acceptable risk of the normothermic machine perfusion is to be expected.
Renal biopsies are obtained during machine perfusion (start and finish). These biopsies have been shown to possess no risk to the patient. No extra vena puncture for blood sampling will be performed as all will be combined with routine vena puncture. The total amount of blood samples taken is 100 ml during the study.
The most important benefit from participation is the prospect of a better functioning graft post-transplant.

Contacts

Public
Erasmus MC, Universitair Medisch Centrum Rotterdam

's-Gravendijkwal 230
Rotterdam 3015CE
NL
Scientific
Erasmus MC, Universitair Medisch Centrum Rotterdam

's-Gravendijkwal 230
Rotterdam 3015CE
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

- Recipient age * 65 yr
- Listed for renal transplantation due to end stage renal disease on the ET list

Exclusion criteria

- Donor kidney which is unsuitable for transplantation

Study design

Design

Study type: Interventional

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

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	04-02-2018
Enrollment:	10
Type:	Actual

Medical products/devices used

Generic name:	Kidney Assist
Registration:	Yes - CE intended use

Ethics review

Approved WMO Date:	29-11-2017
Application type:	First submission
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)

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	NL63063.078.17