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Organ perfusion with Custodiol-N compared with Custodiol solution in living donor kidney transplantation

Submission date
03/03/2015

Recruitment status
No longer recruiting

Registration date
10/04/2015

Overall study status
Completed

Last Edited
10/04/2015

Condition category
Urological and Genital Diseases

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
When organs are removed for transplantation, they are placed in an ice-cold preservation fluid before being transported to the recipient. Bretschneider's HTK solution (Custodiol) has been in clinical use for almost 30 years. For fundamental pathophysiological reasons ischemia time (the time between chilling the organ to be transplanted after removal from the donor and warming it up again by reintroducing a blood supply) should be kept as short as possible. This means that the most suitable perfusion solution is one which provides an adequately safe ischemia time for all the organs involved. Since Custodiol solution has been in use, and particularly within the last 10 years, additional knowledge about the mechanisms of cell and tissue injury during cold ischemia has been gained. The traditional Custodiol solution has been reformulated with these findings in mind. Custodiol-N is an amino acid-fortified and iron chelator-supplemented cardioplegic and organ preservation solution that is (otherwise) based on the principles of Custodiol solution. It has been shown to perform better than the traditional solution in in vitro studies. In particular, Custodiol-N was much better at preventing hypoxic (lack of oxygen) and cold-induced injuries to body cells. Here, we want to compare the perfusion of living donor kidneys with Custodiol-N solution compared to perfusion of living donor kidneys with Custodiol solution in relation to retaining the function of the kidneys.

Who can participate?
Adults aged at least 18 and awaiting a living donor kidney transplant.

What does the study involve?
Participants are randomly allocated into one of two groups. Those in group 1 have their donor kidney perfused with 250-1000ml Custodiol before transplantation. Those in group 2 have their donor kidney perfused with or Custodiol-N solution before transplantantion. During the procedures the kidney is kept on sterile ice and bathed in the particular perfusion solution. Each participant is then followed-up at 1, 3, 7 days and then at 1 and 3 months after transplantation.

What are the possible benefits and risks of participating?
All data available so far suggest that Custodiol-N has both a lower cytotoxicity than Custodiol

and a better to far better protective potential than Custodiol. The only known side effect of Custodiol-N is a reduction in blood pressure if large amounts of the solution enter the systemic circulation. In large animal experiments with cardioplegia (dogs), this was noted but did not cause a threat to the animals, in
large animal experiments with liver transplantation (pigs) no hypotension was noted in the recipients that received Custodiol-N-preserved grafts as compared to recipients that received Custodiol -preserved grafts. Therefore, the potential benefits of Custodiol-N by far outweigh the potential risks of its use.

Where is the study run from?
Department of General, Visceral and Transplantation Surgery University of Essen (Germany)

When is the study starting and how long is it expected to run for?
April 2015 to April 2018

Who is funding the study?
Dr. F. Köhler Chemie GmbH (Germany)

Who is the main contact?
Professor Andreas Paul

Contact information

Type(s)
Scientific

Contact name
Professor Andreas Paul

Contact details
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45147

Additional identifiers

EudraCT/CTIS number
2013-005503-13

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
1.0_Custodiol Version

Study information

Scientific Title

A prospective randomized single blind monocenter phase II study of organ perfusion with Custodiol-N compared with Custodiol solution in living donor kidney transplantation

Study objectives
The objective of this investigation is to demonstrate non-inferiority in outcome of Custodiol-N against Custodiol in kidney transplantation.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Ethics Committee University Duisburg-Essen, 16/02/2015, ref: 14-6075-AF

Study design
The study design is a prospective, randomized, single blind, monocenter, phase II comparison study of organ perfusion intended to demonstrate non-inferiority of Custodiol-N against Custodiol in living donor kidney transplantation.

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Other

Participant information sheet

Health condition(s) or problem(s) studied
Kidney failure
Living donor kidney transplantation

Interventions
Each organ will be perfused with 250-1000ml Custodiol or Custodiol-N solution prior transplantantion. During the procedures the kidney is kept on sterile ice and bathed in the particular perfusion solution.
Mode of administration: by infusion, extracorporeal isolated organ perfusion. Follow-up visits are planned at day 1, 3, 7 and 1 and 3 months after transplantation.

Intervention Type

Primary outcome measure
Non-inferiority of Custodiol-N vs. Custodiol perfusion in relation to renal function reflected through the GFR calculated with CKD EPI GFR Equation at 3 months after transplantation.

Secondary outcome measures

1. Incidence of primary non-function (PNF) in the study period
2. Incidence of delayed graft function (DGF) in the study period
3. GFR calculated with Cystatin C GFR Equation at day 7 and 1 and 3 months after transplantation
4. GFR calculated with CKD EPI GFR Equation at day 7 and 1 months after transplantation
5. Serum creatinine and serum urea on day 1, 3, 7 and 1 and 3 months after transplantation
6. Graft survival during the study period
7. Patient survival during the study period
8. Occurrence of minor and major complications (classification in accordance to Clavien-Dindo) in the study period
9. Biopsy-proven rejections in the study period
10. Dialysis requirement in the study period
11. Cortical tissue perfusion (measured by O2c) 30 minutes after reperfusion

Overall study start date
01/04/2015

Completion date
01/04/2018

Eligibility

Key inclusion criteria
1. All indications for kidney transplantation as defined by local transplant law (TPG, Abs. 4, § 10)
2. Living donors should fulfill the criteria for living organ donation in accordance to local transplant law (TPG, Abs. 3, § 8)
3. Recipients awaiting their first transplant
4. Recipients ≥ 18 years
5. The recipient’s signed informed consent of data use and protection before randomization

Participant type(s)
Patient

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
72

Key exclusion criteria
1. Any contraindication for performance of a kidney transplantation as defined by local transplant law (TPG, Abs. 4, § 10)
2. Donors or recipients participating in another study involving compound/interventions aimed at the reduction of preservation and/or ischemia/reperfusion injury

3. Deceased donor kidney transplantation
4. Pregnant or lactating recipient patients
5. Female recipients of child-bearing potential who are not using a highly effective contraception method with a pearl-index <1
6. Multiorgan transplantation
7. Double kidney transplantation
8. Perfusion of the kidney by machine perfusion
9. Repeated kidney transplantation
10. Panel reactive antibodies > 85%
11. ABO incompatible kidney transplantation
12. Known hypersensitivity/anaphylaxis against iron chelators

Date of first enrolment
01/04/2015

Date of final enrolment
30/04/2017

Locations

Countries of recruitment
Germany

Study participating centre
Department of General, Visceral and Transplantation Surgery University of Essen (Klinik für Allgemein-, Viszeral- und Transplantationschirurgie University of Essen)
Hufelandstra & szlige 55
Essen
Germany
45147

Sponsor information

Organisation
Klinik für Allgemein-, Viszeral- und Transplantationschirurgie/ Universitätsklinikum Essen

Sponsor details
Hufelandstr. 55
Essen
Germany
45147

Sponsor type
Hospital/treatment centre

Website

http://www.uk-essen.de

ROR
https://ror.org/02na8dn90

Funder(s)

Funder type
Industry

Funder Name
Dr. F. Köhler Chemie GmbH (Germany)

Results and Publications

Publication and dissemination plan

Intention to publish date
01/05/2018

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration