The impact of cold ischaemia time on outcome of living donor kidney transplantation: a systematic review and meta-analysis.

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Citation

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Review Question

What is the impact of a longer cold ischaemia time (> 4 hours) compared to a shorter cold ischaemia time (< 4 hours) in terms of delayed graft function (DGF)/primary non-function (PNF), graft survival, 1y and 5y patient survival, 1y and 5y estimated GFR, serum creatinine, and incidence of rejection?

Searches

The search for articles will be conducted in the following electronic databases: Embase, Medline Ovid, Cochrane CENTRAL, Web of Science and Google Scholar. The language of the articles must be English, and the databases will be searched until the 1st of March 2019.
Below is the search string conducted in the Embase library. Other search strings have been adapted accordingly for their respective databases.

Embase
('kidney transplantation'/exp OR 'kidney donor'/de OR 'kidney preservation'/exp OR 'nephrectomy'/exp OR 'renal graft dysfunction'/exp OR 'organ transplantation'/de OR (((kidney* OR renal OR organ OR organs) NEAR/10 (transplant* OR graft* OR allograft* OR homograft OR allotransplant* OR homotransplant OR donor* OR donation* OR recipient* OR preservat* OR storage* OR cold-ischem* OR cold-ischaem*)) OR nephrectom* OR uninephrectom* OR LDKT OR LDTx OR LDT):ab,ti) AND ('cold ischemia'/de OR 'cold ischemia time'/de OR (((cold-ischem* OR cold-ischaem*) NEAR/3 (time*))):ab,ti) AND ('living donor'/exp OR (LDKT OR LDTx OR LDT OR ((living OR alive OR live OR heart-beating) NEAR/4 (donor*))):ab,ti) AND [English]/lim NOT ([Conference Abstract]/lim AND [1800-2016]/py)

Types of study to be included

Randomised controlled trials and retrospective or prospective non-randomized studies will be included.

Condition or domain being studied

Living donor kidney transplantation (LDKT) is superior to deceased donor kidney transplantation (DDKT) regarding patient and graft survival. One of the key factors to this is the short cold ischemia time (CIT) in living donor kidney transplantation. ‘Short’ is considered 2-3 hours compared to 12-24 hours in deceased donor kidney transplantation. The effects of a longer CIT in living donor kidney transplantation has not yet been described in a systematic review.

The main aim of our study is to investigate whether a longer CIT is harmful for a LDKT recipient. Multiple studies have investigated the effect of this CIT in

LDKT, but no robust conclusions have been obtained from a systematic review and meta-analysis to date. All that is known a shorter CIT is better, but to what extent patient outcomes will be influenced remains to be demonstrated.

Participants/population
Adult living donor kidney transplant recipients.

Intervention(s), exposure(s)
A CIT of more than 4 hours.

Comparator(s)/control
A CIT of less than 4 hours.

Context

Main outcome(s)
delayed graft function (DGF)

Additional outcome(s)
Primary non-function (PNF), graft survival, 1y and 5y patient survival, 1y and 5y estimated GFR, serum creatinine, and incidence of rejection.

Data extraction (selection and coding)
Paper selection will be performed independently by two investigators (SCvdL and JAL). All aspects of the Cochrane Handbook for interventional systematic reviews will be followed. Study inclusion is carried out in three phases: an initial title screening will be performed during which irrelevant titles will be excluded. The abstracts of the remaining articles will be acquired and independently assessed for eligibility. Full articles of the abstracts regarded potentially eligible will be retrieved and undergo complete review and assessment until a final compilation of articles will be made. When an inconsistency between the two investigators occurs, articles will be discussed together with a senior investigator (FJMFD) to reach consensus. When data are not specified in the study, the investigators will reach out to the authors of the original paper to obtain the original data.

Risk of bias (quality) assessment
As studies will very likely be exclusively non-randomized trials, we will use the Newcastle-Ottawa scale and the GRADE-tool to calculate the risk of bias.

Strategy for data synthesis
Our aim is to do both descriptive and quantitative synthesis. If a study compares a longer CIT versus a shorter CIT and outcome parameters can be compared between studies, a meta-analysis will be performed using RevMan 5.3 (The Nordic Cochrane Centre, Copenhagen, Denmark). When heterogeneity is present between our studies, we will apply a random effect model. When there is little variation between the study population, we will use fixed effect models in RevMan. All studies not comparing a longer versus a shorter CIT will be assessed by descriptive analysis.

Analysis of subgroups or subsets
If the literature/included studies prompt us to divide our intervention and control group into subgroups, we will do this. For instance, if it is more logical to divide the studied outcomes in groups of two hours (0-2 hours CIT, 2-4 hours CIT etc.) we will create these subgroups.

Type and method of review.
Systematic review and meta-analysis on the effect of cold ischaemia time on LDKT outcomes.

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None

Conflicts of interest
The authors declare that they have no known conflicts of interest.

Language

English

Countries
United Kingdom

Stage of review
Literature search finished, including studies finished, quality assessment finished, risk of bias started, data extraction finished, outcome analysis started.