Kidney transplant

Kidney transplantation is indicated in any patient with chronic renal failure. At present, it is a routine method of replacing kidney function, which should be preferred over others (hemodialysis, peritoneal dialysis), both from a prognostic and economic point of view.

Indication

Transplantation should be indicated for a patient who reaches stage 4 of chronic renal insufficiency according to K/DOQI in the progression of renal failure, generally the sooner the better. It would be ideal if the patient did not have to undergo another method of replacing kidney function (hemodialysis) before the transplant.

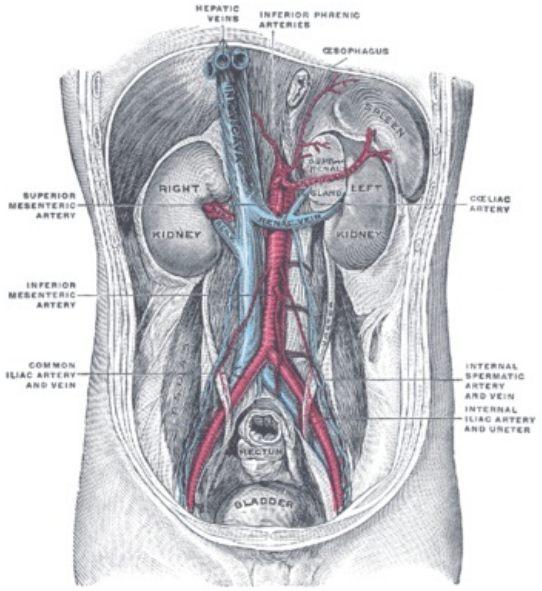
Diseases that lead to kidney failure:

1. glomerulopathy (most often IgA);
2. chronic tubular diseases;
3. diabetic nephropathy;
4. polycystic kidney disease.

In the case of a diagnosis of type I diabetes mellitus in combination with severe (terminal) diabetic nephropathy, the kidneys are transplanted together with the pancreas as a combined pancreas transplant and kidneys, when the advantages of subsequent common immunosuppressive treatments. A kidney transplant (with subsequent immunosuppressive treatment) is also a supporting factor for the decision to perform pancreas transplantation in a diabetic.

Contraindications

- Acute or chronic infection;
- Heart Failure;
- coagulopathy;
- AIDS;
- malignant disease;
- advanced liver or lung diseases.



Donors

Living Donors

Most often they are relatives, partners, but it is not a condition. They can also be strangers. The main factor is the voluntariness of the donation and the health of the donor. In order not to endanger the donor by removing one kidney, it is necessary to assess the function of the kidney in the future, if there is no risk of, for example, glomerulonephritis).

Deceased (cadaveric) donors

In the Czech Republic, the so-called assumed consent for donation after death applies. If a person does not express during his life that he does not want to donate organs, he is automatically considered a donor. One of the requirements is brain death proven panangiography (2x within 30 min), then also no damage to kidney function (preserved peripheral circulation required) and cold ischemia for up to 24 hours.

Immunology

Compatibility in **blood groups** (AB0 system) is one of the most important. Transplantation is, however, also possible in case of mismatched blood groups (in the Czech Republic since January 2011). Antibodies in the event of a mismatch must be removed from the blood of the recipient, for example by adsorption or plasmapheresis. If there is a match in as many "HLA features" as possible and there is a low titer of lymphocytotoxic antibodies, the cross-examination will be negative. The cross-examination means that we combine the recipient's serum, the donor's lymphocytes and the complement. If the cross-test is positive, the antibodies need to be removed.

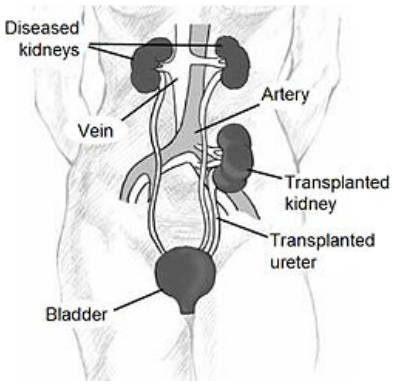
Surgical technique

1. Removal of kidney;
2. heterotopic placement of the graft in the right iliac fossa (vessels are connected to the iliac artery and vein, the ureter is sutured to the bladder);
3. the original kidneys are usually left in place, where they gradually shrink and atrophy (the exception is polycystic kidneys, which are removed);

4. in most cases, only one kidney is transplanted, rarely two (the other to the left iliac fossa), when one would not be enough to restore renal function.

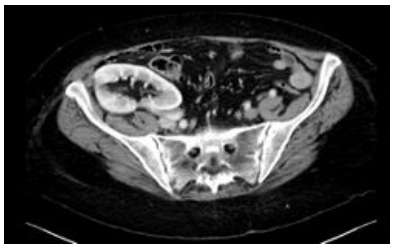
Postoperative development

In 65% of cases, the kidney works immediately after transplantation. The patient is hydrated to begin urine formation.
In 25% there is a **delayed development of graft function** and the kidney does not work for a short time (days to weeks). After a certain time the function develops, until then hemodialysis is necessary.
In 10%, the kidney does not work at all due to thrombosis or unknown causes, for example due to primary afunction.



Statistical data

The average **waiting time for a kidney is 12 months'**, which is much less than, for example, in the USA (3-4 years). This is due to the fact that many patients in our country are not indicated for transplantation, even if they could be. Up to 15% of kidney transplants are repeat transplants. Due to a temporary rejection of the graft, which is not a contraindication to further procedure. One-year survival of patients after transplantation exceeds 95%. Ten-year graft survival after transplantation is 50%.



Immunosuppression

1. **Inductive**
   - ATG – antithymocyte globulin – polyclonal antibodies against T lymphocytes
   - **basiliximab** - monoclonal antibody against the IL-2 receptor on T lymphocytes (anti CD25)
   - alemtuzumab (anti CD52)
2. **Maintenance** - triple combination:
   - corticosteroids (prednisone);
   - basic immunosuppressants (cyclosporine A or **tacrolimus**);
   - adjuvant immunosuppressants (azathioprine, **mycophenolate mofetil**).
3. **Anti-rejection** - therapy of acute graft rejection:
   - corticosteroid pulse doses of 250–500 mg of prednisone for 3–5 days, if even doses of 2–3 g of prednisone do not work, we consider corticosteroid resistant;
   - in corticoresistance to polyclonal antilymphocyte antibody – ATG or monoclonal basiliximab (anti IL-2R), alemtuzumab (anti CD52).

Cyclosporin A and tacrolimus bind to cycloneurin and inhibit IL-2 expression.

Possible side effects:

Adverse effects include mainly nephrotoxicity and neurotoxicity. Tacrolimus can cause DM of the receptor type, so cyclosporine is used instead of tacrolimus in diabetics. Azathioprine is hepatotoxic and myelotoxic. It is therefore recommended to use mycophenolate mofetil instead. Last but not least, it is necessary to mention that other side effects include the threat of DM, Cushing's syndrome, osteoporosis, hyperlipidemia due to corticoids.

Complications after transplantation

1. Early:
   - graft rejection (hyperacute, acute) – treatment see above;
   - urinary fistula;
   - thrombosis of graft artery or vein;
   - opportunistic infections:
     - CMV pneumonitis (ganciclovir);
     - pneumocystosis (cotrimoxazole);
     - legionella (erythromycin).
2. Late:
   - hypertension (graft artery stenosis);
   - chronic liver failure;
   - tumors (skin, lymphomas, Grawitz);
   - chronic rejection.

Links

Related Articles

- Chronic kidney disease

- Replacement of kidney function
- Pancreas Transplantation

External links

- Czech transplant society for patients - kidney transplant (https://transplantace.eu/site/?page_id=119)
- Transplant Coordination Center - kidney transplantation (http://www.kst.cz)

Source

PASTOR, Jan. Langenbeck's medical web page [online]. [feeling. 5/24/2010]. < http://langenbeck.webs.com >.

References

ČESKA, Richard, et al. Internal 1st edition. Prague: Triton, 2010. 855 pp. pp. 562-564. ISBN 978-80-7387-423-0 .