ODESSA NATIONAL MEDICAL UNIVERSITY

Department of urology and nephrology

METODSCAL WORKING of practical training for teachers

Academic discipline “Urology”

Lesson №16 Transplantology. Deontological aspects, legal bases of transplantation, donor selection.

Academic discipline “Urology”
Level of higher education: Second (Master’s)
Knowledge field: 22 "Health Care"
Specialty: 222 "Medicine"
Program of professional education: Medicine

Approved
methodological meeting on the chair
28. 08. 2023
Protocol № 1
Head. Chair prof. F.I. Kostev

Odesa 2023

The subject of the lesson 16: Transplantology. Deontological aspects, legal and legal bases of transplantation, donor selection. Neurogenic disorders of urination.

The number of hours is 2.

JUSTIFICATION OF THE TOPIC

The idea of the possibility of replacing an organ affected by a pathological process arose many thousands of years ago. However, the technical imperfection of surgical techniques and anesthesia support did not allow these assumptions to be realized. The development of surgical techniques allowed attempts to transplant individual parts of the body - fingers, nose, ears and even limbs, but all attempts were in vain. In connection with the expansion of the volume of surgical interventions, the development of anesthesiology and intensive therapy, the achievements of pharmacology (synthesis of immunosuppressors), it became possible to carry out a large number of transplants of donor organs to sick people. Every year, about 100,000 organ transplants and more than 200,000 human tissue and cell transplants are performed worldwide, and the real need is ten times greater.

PURPOSE OF THE LESSON

Learn:

The concept of transplantology. Classification of transplants. Features of the application of various types of transplants. Deontological and ethical aspects, legal and legal bases of transplantation.

Know (theoretical questions):

1. Basic ethical, legal, legal and deontological provisions in surgery.
2. Basic definitions: "transplantology", "donor", "recipient". 3. Classification of transplants.
4. Modern materials for the manufacture of artificial transplants. 5. Basic principles of selection of donor organs for transplantation. 6. Risk groups during transplantation.
7. Requirements for donors during transplantation.
8. The essence and methodology of certain types of organ and tissue transplantation.

Be able:

1. Determine the main indications for transplantation of organs and tissues.
2. Correctly interpret the signs of the disease, which involves liforging by means of transplantation.
3. Assess the patient's condition and predict the consequences.
4. Evaluate the results of the patient's examination.
5. Establish a diagnosis according to classification approaches.
6. Outline the treatment plan.

TESTS FOR CHECKING THE INITIAL LEVEL OF KNOWLEDGE

1. Autogenous transplantation is when, during tissue collection and transplantation, the donor and recipient:

1. One and the same person. 4. Representatives of one biological species. 2. Identical twins. 5. Belong to different biological species 3. Relatives of the first degree.

2. Allogeneic transplantation is when, during tissue collection and transplantation, the donor and recipient:

1. One and the same person. 4. Representatives of one biological species. 2. Identical twins 5. Belong to different biological species. 3. Relatives of the first degree.

3. Isogenic transplantation is when, during tissue collection and transplantation, the donor and recipient:

1. One and the same person. 4. Representatives of one biological species. 2. Identical twins. 5. Belong to different biological species 3. Relatives of the first degree.

4. Xenogeneic transplantation is when, during tissue collection and transplantation, the donor and recipient:

1. One and the same person. 4. Representatives of one biological species. 2. Identical twins. 5. Belong to different biological species. 3. Relatives of the first degree.

5. Syngeneic transplantation is when, during tissue collection and transplantation, the donor and recipient:

1. One and the same person. 4. Representatives of one biological species. 2. Identical twins. 5. Belong to different biological species. 3. Relatives of the first degree.

6. Explantation is a transplant:

1. Fabric from person to person. 3. Inanimate substrate. 2. Fabric from an animal to a person.

7. Indications for plastic surgery with a migrating flap are everything except the defect:

1. Brushes. 2. Forearm. 3. Thighs. 4. Lower legs. 5. Feet.

8. Remote connected skin plastic according to V. P. Filatov is a method of flap plastic surgery:

1. Stemmed. 3. Arterized skin and fat.

2. Bridge-like. 4. Rounded migratory stem. 5. Split skin.

9. A split skin flap for transplantation is:

1. A cut layer of the epidermis. 4. Proper skin with a thin layer 2. Part of proper skin. subcutaneous tissue.

3. The skin itself. 5. Narrow flaps of actual skin. 10. A graft for autodermoplasty according to the Lawson–Krause method is:

1. Pieces of skin 0.3–0.5 cm in diameter.

2. Flaps of split skin up to 3 × 5 cm in size. 3. Full-layer flap - "sieve".

4. One-piece full-layer skin flap.

5. Full-layer flap with checkerboard notches.

11. Brephoplasty is a transplant:

1. Auto skins. 4. Skins from an identical twin. 2. Skins from a corpse. 5. Skins from a relative of the first degree. 3. Skins from the embryo.

12. Corpse tissues for conservation shall be prepared after death no later than:

1. 2 hours 2. 6 hours 3. 12 o'clock 4. 6 p.m. 5. 24 hours

13. Specify an unacceptable method of preservation of tissues and organs for transplantation:

1. Cryopreservation. 4. In paraffin.

2. In a hypertonic solution of sodium chloride. 5. In an aldehyde solution. 3. Lyophilization.

14. The criterion for the death of the donor's brain is everything except: 1. Deep reflexless coma.

2. Absence of cough reflex during endotracheal suctioning.

3. Complete central respiratory paralysis. 4. Isoelectric line in EEG.

5. A sharp decrease in intracranial blood flow.

15. After suturing a vascular prosthesis, all complications are possible, except: 1. Early thrombosis of the prosthesis. 3. Infection of the explant. 2. Secondary remote 4. Anastomosis aneurysms.

thrombosis of the prosthesis. 5. Explant atherosclerosis. 16. Replantation is a transplant of organs or tissues:

1. Repeated after rejection. 2. To a new anatomical place.

3. To the previous place.

TOPIC CONTENT

1. History of the development of transplantology

Transplantation is a fairly young branch of medicine. The year 1900 is considered the beginning of the modern era of transplantology, when the Austrian microbiologist and immunologist Karl Landsteiner discovered blood groups, and later, together with A. Wiener, the Rhesus factor. Thus, it was proved that the organism has a certain group antigenic affiliation. The first experimental organ transplant was performed by E. Ulman in Vienna (Austria). The scientist-surgeon worked on the development of a vascular suture and in January 1902 presented a goat with a dog's kidney transplanted to its neck at the council of the Royal Society of Surgeons.

In 1912, Alexis Karel received the Nobel Prize for developments in experimental transplantology - he performed experiments on organ transplantation, their preservation and vascular anastomosis techniques, developed the basic principles of donor organ preservation and its perfusion. He successfully transplanted hearts and kidneys into animals, and they functioned successfully for a while.

In 1951, the Russian scientist V. P. Demikhov experimentally developed and first performed a transplant of a donor heart into a dog. The first successful kidney transplant from a twin to his brother was performed by D. Murey in 1954. The patient lived after the operation for 20 years, maintaining social activity.

In 1963, a group of American surgeons led by T. Starls made the first attempt at a liver transplant.

Lung transplantation was first performed in 1963 by D. Hardy in the USA, but the patient died a few days after the operation. D. Cooper performed a successful lung transplant in 1983, and in 1986 he transplanted both lungs. On December 3, 1967, a surgeon from South Africa, Christian Barnard (after a previous internship with V. P. Demikhov), successfully performed a heart transplant for the first time in the world.

In 1972, J. F. Borrell in Basel (Switzerland) discovered the selective immunosuppressant cyclosporin A, which allowed effective and relatively safe prevention of transplant rejection.

Definition

Transplantation (late Latin transplantacio, from transplantanto - to transplant) is the transplantation of tissues and organs, grafting of organs or tissues to replace defects, stimulate regeneration.

A donor (lat. donor from dono – I give) is a biological object that gives material (tissues, organs) during its lifetime or after its death for transplantation. Anatomical materials can be obtained from a living or deceased donor.

A recipient is a biological object to which biological materials from a donor are transplanted.

Types of transplantation

Autotransplantation is the transplantation of organs and tissues within the same organism.

Homotransplantation is a transplant from one organism of the same species to another organism of the same species.

Heterotransplantation is a transplant in which the donor and recipient belong to different species of the same genus.

Xenotransplantation is a transplant in which the donor and recipient belong to different genera and families.

All types of transplantation opposed to autotransplantation are called allotransplantation.

Autotransplantation of organs and tissues has become widespread in clinical transplantology, since there is no tissue incompatibility with this type of transplantation. Transplantation of skin, fatty tissue, fascia, cartilage, pericardium, bone fragments, and nerves is performed most often. An example of organ autotransplantation is a kidney transplant, which is performed in case of widespread ureteral stenoses for the purpose of extracorporeal reconstruction of kidney vessels.

Immunological aspects of transplantology

In 1949, F. Burnet developed a general theory of immunity - the theory of clonal selection. Its essence is that the ability of cells to distinguish "own" from foreign is not innate, but is formed during embryogenesis, during which immunological tolerance is developed to tissues that were presented as "native".

The recipient's body always tries to get rid of foreign antigens, and the main histocompatibility complex - HLA (from English Human leucocyte antigens) always takes part in the immune response. The genes of the HLA system of the first class include loci B, C, E, A, G, F. Some of them - loci B, C, A - are classified as the so-called classical ones, encoding well-studied transplantation antigens. The recently discovered loci E, G, F are genes with a biological function that has not yet been determined. Molecules of the first class are found in almost all tissues. The number of combinations with A, B, C alone is 48,000! HLA molecules of the second class are encoded by three loci - DP, DQ and DR. Normally, these molecules are produced by a limited number of cells: professional antigen-presenting cells, macrophages and B-lymphocytes, which are activated by T-lymphocytes. The third class unites proteins of the complement system, heat shock branches, and tumor necrosis factor (TNF).

The cellular reaction against incompatible HLA-antigens depends on T-lymphocytes. T-helpers recognize class II antigens, T-cytotoxic lymphocytes recognize class I, and T-suppressors

promote graft engraftment. The reaction of transplant rejection is complex and complex, depends on the action of activated T-helper lymphocytes.

Risk groups

The main contraindication in preparation for transplantation is the presence of serious differences between the donor and the recipient. Risk groups include oncology patients who have malignant neoplasms with a short period of time after radical treatment. Kidney transplantation is contraindicated in patients with acute active and inflammatory diseases, as well as with exacerbation of chronic diseases. Transplant patients are required to strictly adhere to the administration of immunosuppressants. People who have changes in consciousness as a result of chronic alcoholism and drug addiction are also classified as a risk group.

Requirements for donors

The transplant can be obtained from living donors of relatives or cadaver donors. The main criteria for the selection of a transplant are the correspondence of blood groups, genes, the main histocompatibility complex, approximate correspondence of body weight, height, age and gender of the donor and recipient. Donors should not be infected with transmissible infections (syphilis, hepatitis, HIV). Currently, in connection with the global shortage of donor organs, the requirements for donors are constantly expanding.

Legal aspects of transplantology

Law No. 1007-XIV dated 16.07.1999 "On Transplantation of Organs and Other Anatomical Materials to Humans" is in force in Ukraine, according to which transplantation of organs and tissues from a living donor is permitted if the donor and recipient are relatives or currently married, you can provide an even organ or part of an odd organ. The donor must be of legal age and able to act. It is not allowed to take homotransplants from persons who are in prisons, suffer from severe mental disorders, or have diseases that can be transmitted to the recipient. During his lifetime, a person can sign an expression of will about consent or disagreement to be a donor after death, in the absence of the latter, biomaterial can be removed only with the consent of relatives or spouse. Only medical institutions specially accredited by the Ministry of Health of Ukraine have permission to collect donor organs.

Liver transplantation

The main indications for transplantation are liver cirrhosis, cholestatic diseases, acute liver failure, and metabolic diseases.

The following types of orthotopic transplantation are performed both from a cadaver and from a living donor: transplantation of a reduced liver, split liver (in vitro, in situ). A domino transplant is also performed: a donor liver from a cadaver replaces the patient's liver, and the latter, after separation, is transplanted to two other patients (the method is used in the treatment of familial amyloid neuropathy).

Pancreas transplantation

The first transplantation of part of the pancreas into the iliac fossa was performed in 1966, and such an operation is still performed in some clinics. In most cases, the pancreas is transplanted together with the kidney. The indication for transplantation is the patient's resistance to insulin, labile course of diabetes with a tendency to hyper- and hypo-glycemic states.

Transplantation of the heart, lungs and heart-lung complex The indication for heart transplantation is the terminal stage of heart disease

deficiencies; before transplantation of the heart-lung complex - congenital heart defects with Eisenheimer's syndrome and primary pulmonary hypertension; before lung transplantation - pulmonary emphysema, cystic fibrosis.

Kidney transplantation

The indication for this transplantation is terminal chronic renal failure. A donor kidney is usually transplanted into the iliac fossa (heterotopic transplantation). The phenomena of kidney failure disappear after a few weeks, so in the postoperative period the patient needs several sessions of hemodialysis.

Cell transplantation

Transplantation of tissue culture is usually a simple surgical manipulation, which in most cases is simplified to a simple injection. Before transplantation, it is possible to carry out preliminary treatment of tissues with the aim of reducing the immunogenicity of the donor material, which allows not to use immunosuppression or to reduce its intensity. At the current stage of medical development, bone marrow transplantation, neurotransplantation, cellular cardiomyoplasty, and pancreatic islet cell transplantation are performed.

Tissue transplantation

Operations related to tissue transplantation from one part of the body to another in order to replace defects and restore lost functions are also related to reconstructive surgery. Depending on the type of tissues to be transplanted, skin, muscle, bone, nerve, and vascular plastics are distinguished.

Skin flaps are used to replace skin defects. Transplantation of adipose tissue is used mostly in plastic surgery to eliminate cosmetic defects, fascia transplantation is performed to replace defects of the meninges, for hernias and surgical interventions in orthopedics. Vascular transplantation is used when it is necessary to replace defects of arteries and veins. Transplantation of cartilage tissue is used to correct defects of the nose and larynx.

Thus, at this stage of the development of modern science, transplant-tol

General principles of legal regulation of transplantology Every year in Ukraine, organ transplantation for kidney diseases

needs about 1,000 citizens, with irreversible liver and heart diseases – 1,500 each, with diabetes – 2,000. Due to the lack of the required number of transplants, patients cannot receive qualified medical care in a timely manner. The number of annual organ transplant operations performed is 1.1 percent of the total need. In such countries as Norway, the USA, Italy, France, Poland, there are 57.6 per 1 million population, respectively; 56; 33; 21; 14.7 kidney transplant operations, while in Ukraine this indicator is equal to 1.2. About 150 patients with end-stage chronic renal failure per 1 million population are registered in Ukraine every year. As of 2006, almost 6,000

citizens need kidney replacement therapy, a quarter of whom need a kidney transplant. Every year, the number of patients increases, the level of disability and mortality increases.

According to general data, the current global need is at least 1 million clinical kidney, heart, and liver transplants, not including other organs.

One-year survival rates reflect the clinical effectiveness of this treatment method. In leading clinics, this indicator equals 90-95% for the kidney, 85% for the heart, and 80% for the liver.

Thus, the issue of transplantation and, in particular, its legal regulation, are currently the most urgent. This necessitates close attention to these problems on the part of medical professionals and lawyers studying medical law. Legislative regulation of transplantation, implemented

novated by the Law of Ukraine "On Transplantation of Human Organs and Other Anatomical Materials" dated July 16, 1999 No. 1007-XIV, did not completely eliminate the existing problems. There is a certain number of unresolved issues that negatively affect legal security.

The legal, moral, ethical and general medical aspects of transplantation require further study with the following proposals for the improvement of Ukrainian legislation in the field of transplantation of organs and other anatomical human materials.

The fact of more successful development of transplantology in those countries where there is a real legislative basis for its existence is indisputable. At the same time, there are a number of problematic issues that, due to their peculiarities, cause lively discussions both in our country and abroad. The finding of "brain death" of a potential donor while preserving blood circulation and organ viability, the problem of turning off life support, solving the issue of a person's right to dispose of his own body and organs after death are the problems that have not yet been solved.

The relevance of highlighting the legal features of transplantology within the course of medical law is confirmed primarily by the current existence of factors that complicate the correct legal interpretation of organ and tissue transplantation. Basically, a transplant in each case concerns two people at the same time - the donor and the recipient, which determines the special nature of legal regulation (determination of their legal status, protection and realization of legal rights and interests, etc.). This feature distinguishes transplantation from other medical interventions.

The main factors that determine the relevance of the legal regulation of transplantology in our country can be divided into two groups: those that were formed earlier and those that arose recently. The first group includes circumstances that are relevant both in the period of the birth of transplantation and at the present time. We are talking about the moral and ethical, legal and medical aspects of determining the death of a person's brain, the duration of resuscitation measures, etc. However, modern realities have added a number of problems, including the determination of the legal status of tissues and organs after removal from the body, the right to dispose of the body of a deceased person, the peculiarities of the legality of living donation, the potential danger of criminalization of transplantology, etc.

The legal regulation of organ and tissue transplant operations is based on the principles of optimal care for the donor's interests and collegiality. The first of them reflects the priority of the donor's interests in controversial transplantation issues; according to the second, the most complex issues related to the procedure for establishing the diagnosis of the disease and methods of treatment are decided by a council of doctors.

In addition to these important guiding ideas, from the standpoint of the current state of medical law regarding the legal regulation of organ transplantation and other anatomical materials, the following principles should be noted:

- respect and observance of the patient's rights;

- compliance with the order according to the "waiting list";

- decommercialization of organ transplants and other human anatomical materials;

— integration into international transplant communities. The principle of respect and observance of the patient's rights is one of the main,

because it is based on the primary rights of the patient - the right to life, to receive qualified medical care, and to be treated with dignity by the medical staff.

QUESTIONS FOR CONTROL OF KNOWLEDGE

1. What is "transplantation", "donor", "recipient"? 2. What are the types of transplantation?

3. The essence of the technique of selecting a donor-recipient pair. 4. The essence of the method of organ preservation.

5. Features of the use of immunosuppressants. 6. What are the risk groups for transplantation?

7. What are the requirements for donors during transplantation?

8. The essence and methodology of certain types of organ and tissue transplantation.

Developers:
Head of Department of Urology and Nephrology, Professor F.I. Kostev,
Professor of the Department of Urology and Nephrology Yu.M. Dekhtyar
Professor of the Department of Urology and Nephrology M.I. Ukhal
Associate Professor of the Department of Urology and Nephrology I.V. Rachok
Associate Professor of the Department of Urology and Nephrology L.I. Krasiliuk
Associate Professor of the Department of Urology and Nephrology M.V. Shostak
Associate Professor of the Department of Urology and Nephrology R.V. Savchuk
Assistant Professor of the Department of Urology and Nephrology S.V. Bogatskyi
Assistant Professor of the Department of Urology and Nephrology O.M. Kvasha

Recommended literature.
Basic:

1. S.P. Pasechnikov; Urology: textbook/ Ed. S. P. Pasyechnikova, S. A. Vozianov, V. N. Lesovy [and others]. - View. 3rd – Vinnytsia: New Book, 2019.
2. Pasechnikov S.P. Modern problems of urology: [manual]: doctor's guide/ S.P. Pasechnikov, V.I. Zaitsev. - Kyiv: L-ry Health of Ukraine; 2017.
3. Stus V.P. Urology (practical skills for intern doctors) / V.P. Stus, S.P. Pasechnikov. Teaching and methodical manual. - Dnipropetrovsk: Akcent PP LLC, 2016.
4. Sarychev L.P. Symptoms of urological diseases: method. rec. For teachers / L. P. Sarychev, S. M. Suprunenko, S. A. Sukhomlyn, Ya. V. Sarychev. – Poltava, 2019.
5. O.V., Lyulko, O.F. Vozianov Textbook "Urology" 3rd edition. Thresholds Dnipropetrovsk. -

2012 p.
6. "Urology (Methodical development of practical classes for students)" edited by Professor V.P. Stus, second edition, supplemented. / A.P. Stus, Moiseinko M.M., Fridberg A.M., Pollion M.Yu., Barannik K.S., Suvaryan A.L., Krasnov V.M., Kryzhanivskyi O.Yu. - Dnipro: Accent LLC. - 2018. - 336c.
7. Urology: textbook for students. higher med. academic established: translation from Ukrainian publications / S.P. Pasechnikov, S.A. Vozianov, V.N. Lesovoy, F.I. Kostev, V.P. Stus, et al./ Ed. S.P. Pasechnikov - Edition 2. - Vinnytsia: Novaya Knyga, 2015. - 456 p.: illustr.
8. Uro1ogy: textbook for students of higher medical education Institutions /S.P. Pasechnikov, S.O. Vozianov, V.M. Lesovoy (et at.); ed. by Pasechnikov. / S.P. Pasechnikov, S.O. Vozianov, V.M. Lesovoy (et at.) - Vinnytsia: Nova Knyha, 2016. - 400 p.
9. EAU Guidelines, edition presented at the 28th EAU Annual Congress, Milan 2021. ISBN 978-90-79754-71-7. EAU Guidelines Office, Arnhem, The Netherlands.
10. Alan W. Partin, Alan J. Wein, et. all - Campbell Walsh Wein Urology, E-Book (12th ed.) – 2020.
11. Omar M. Aboumarzouk - Blandy's Urology, 3rd Edition – 2019.
12. David Thurtle, Suzanne Biers, Michal Sut, James Armitage. - Emergencies in Urology – 2017.
4. Philipp Dahm, Roger Dmochowski - Evidence-based Urology, 2nd Edition – 2018.

Additional:

1. Boyko M.I., Pasechnikov S.P., Stus V.P. and others Clinical andrology // Doctor's guide "Androlog". - K.: LLC "Library "Health of Ukraine", 2013. - 222 p.
2. Sarychev L.P. Clinical anatomy and physiology of organs of the urinary and male reproductive system: method. rec. for teachers / comp. L. P. Sarychev, S. A. Sukhomlyn, S. M. Suprunenko. – Poltava, 2019. – 11 p.
3. Sarychev L.P. Symptoms of urological diseases: method. rec. for teachers / L. P. Sarychev, S. M. Suprunenko, S. A. Sukhomlyn, Ya. V. Sarychev. – Poltava, 2019. – 14 p.
4. Medical student's library. Urology. Edited by F.I. Kosteva. - Odesa, 2004. – 296p.
5. Atlas-guide to urology. Ed. A.F. Vozianova, A.V. Lulko Dnipropetrovsk, 2002.-T. 1,2,3
6. Urology / Ed. Prof. O.S. Fedoruk - Chernivtsi: Bukovyna State Medical University, 2011. - 344p.

Information resources:

University website https://onmedu.edu.ua
Library library.odmu.edu.ua
1. https://uroweb.org/
2. https://www.nccn.org/
3. https://www.auanet.org
4.https://www.inurol.kiev.ua/
5. https://www.souu.org.ua/