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Confirming the Brain Death and the Nurse's Tasks in the Care of Potential Organ Donors and Their Families

Stwierdzanie śmierci mózgu a zadania pielęgniarki w opiece nad potencjalnym dawcą narządów i jego rodziną

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Abstract

Introduction. Transplantology is the youngest area of medicine dealing with organ transplantation that is considered to be the most difficult.
Aim. The aim of the work is to analyse the nurse's tasks in the care of the organ donor after confirming brain death and propagate the idea of transplantology.
Case Report. A 52-year-old patient admitted to the hospital at the neurological department after a craniocerebral trauma. Computed tomography of the head showed brain contusion, fractures of the bones of the skull cover, the presence of a small amount of air in the cranial cavity. Immediately after admission, the patient was tangled, conscious, reluctant to answer questions, without paresis and a short-term seizure. Anti-oedema and anti-epileptic treatment was implemented in the neurosurgery department. After starting treatment, there was a temporary improvement, followed by a secondary worsening of brain and brain stem failure with deep cerebral coma. The patient was referred for further treatment in the Intensive Care Unit.
Discussion. Organ transplantation involves collecting them from the donor and implanting them into the recipient. The donor can be either a living person (when it comes to paired organs or fragment of the liver as well as the tissues and cells) or the deceased person, who during their life did not express objection to organ donation after their death. The major principle in this case is the pronouncement of brain death, i.e. confirmation of patient's death resulting in changing the therapeutic goals.
Conclusions. Transplantology is an interdisciplinary field of medicine, the success of which relies on the cooperation of many professionals. The nurse takes an active part in the team's work starting from the donor's organs eligibility, through transplantation, to the care of the patient after the transplantation. The nurse also participates in building up an atmosphere favourable for good relations with the potential donor's family. **(JNNN 2019;8(3):124–132)**
Key Words: transplantation, brain death, nursing care

Streszczenie

Wstęp. Transplantologia to najmłodsza i uznawana za najtrudniejszą dziedzina medycyny zajmująca się przeszczepianiem narządów.
Cel. Celem pracy jest analiza zadań pielęgniarki w opiece nad dawcą narządów po stwierdzeniu śmierci mózgu oraz propagowanie idei transplantologii.

Opis przypadku. Pacjentka lat 52 przyjęta do szpitala na oddział neurochirurgiczny po doznanym urazie czaszkowo-mózgowym. Tomografia komputerowa głowy wykazała stłuczenie mózgu, złamanie kości pokrywy czaszki, obecność niewielkiej ilości powietrza w jamie czaszki. Bezpośrednio po przyjęciu chora splątana, przytomna, niechętnie odpowiadająca na pytania, bez niedowładów z krótkotrwałym napadem drgawek. Na oddziale neurochirurgii wdrożono leczenie przeciwobrzękowe i przeciwpadaczkowe. Po włączeniu leczenia nastąpiła przejściowa poprawa, po czym wtórnie narastająca niewydolność mózgu i pnia mózgu z głęboką śpiączką mózgową. Chora została przekazana do dalszego leczenia w Oddziale Intensywnej Terapii.
Dyskusja. Transplantacja narządów polega na ich pobraniu od dawcy i wszczepieniu biorcy. Dawcą może być zarówno osoba żywa (jeżeli chodzi o narządy parzyste lub fragment wątroby, a także tkanki i komórki) i zmarła, która za życia nie wyraziła sprzeciwu na pobranie narządów po swojej śmierci. Nadrzędną zasadą w tym przypadku jest stwierdzenie śmierci mózgu, czyli potwierdzenie zgonu pacjenta skutkujące zmianą celów terapeutycznych.
Wnioski. Transplantologia jest interdyscyplinarną dziedziną medycyny, której sukcesy warunkowane są współpracą wielu profesjonalistów. Pielęgniarka bierze aktywny udział w pracach zespołu od momentu kwalifikacji dawcy narządów, przez transplantację, aż po opiekę nad pacjentem po przeszczepie. Uczestniczy również w budowaniu atmosfery sprzyjającej dobrym kontaktom z rodziną potencjalnego dawcy. **(PNN 2019;8(3):124–132)**
Słowa kluczowe: transplantacja, śmierć mózgu, opieka pielęgniarska

Introduction

Transplantology is a branch of medicine dealing with organ transplantation. The term "transplantation" comes from the Latin word transplantare — graft and plantare — to plant. The definitions indicate that it is a type of surgery that aims at collecting cells, tissues or organs from the donor's organism, and then implanting them to the recipient [1]. A "donor" is a person who voluntarily, free of charge, without coercion, consciously donates his or her organs to others. Organs for transplantation can be taken either from the living person (paired organs or fragment of the liver as well as the tissues and cells) or from a deceased person, who during their lives did not express objection to organ collection after their death [2]. In this case, the major principle respected by the different legal systems of countries in the world is the obligation to determine death of the donor [1]. In Poland, the Organizational and Coordination Centre for Transplantation "Poltransplant" is responsible for the organization, coordination and supervision of the program for the collection and transplantation of cells, tissues and organs [3, 4].

The aim of this work is to analyse nurse's tasks in the care of the organ donor after pronouncement of brains death as well as propagating the idea of transplantology.

Case Report

A 52-year-old patient admitted to the hospital at the neurological department after a craniocerebral trauma. Computed tomography of the head showed brain contusion, fractures of the bones of the skull cover, the presence of a small amount of air in the cranial cavity. Immediately after admission, the patient was tangled, conscious, reluctant to answer questions, without paresis and a short-term seizure. Anti-oedema and anti-epileptic treatment was implemented in the neurosurgery department. After starting treatment, there was a temporary improvement, followed by a secondary worsening of brain and brain stem failure with deep cerebral coma. The patient was referred for further treatment in the Intensive Care Unit.

He woman was unconscious during the admission to the ward, 8 points on the GCS scale. Pupils even, responsive, accelerated breathing, shallow, wheezing. In the Intensive Care Unit, the patient was intubated, connected to the BiPAP breathing respirator, a central and arterial cannula and nasogastric tube were inserted. A chest radiograph was taken to confirm that the central catheter and gastric tube were positioned correctly. Neuroprotective treatment with sedation using Propofol, Morphine and Lignocaine was started, high headboard positioning was applied, 3% NaCl was administered. Diuresis was stimulated using Furosemid. Nutritional treatment and nebulization were included. The patient was compensated in terms of circulation, she did not require infusions of catecholamines. After three days of stay in the Intensive Care Unit, the condition worsened: unconscious patient, vegetative storm symptoms, breathing from the respirator in the SIMV mode, tendency to hypertension. The patient was feverish. Diuresis was forced using Torasemid. On the fourth day of the stay, the pupils were unresponsive, wide, unresponsive to light. The hypernatremia and anuria were confirmed. The circulation was stabilized with Levonor infusion. At 0.00 am, there was the suspicion of brain death.

Suggestions for further actions in determining brain death and preparing the donor for organ removal:

— the first series of attempts to confirm brain death; the presence of the family with the patient is necessary to inform its members about the activities related to the determination of brain death; reporting a potential donor for POLTRANSPLANT;

— the second series of attempts to confirm brain death;
— confirmation of death by the commission; the necessary presence of a family who will be informed of this fact: the family should confirm that the deceased did not object to the removal of organs after death; it is necessary to check the patient's current personal status in the Central Registers of Oppositions (CRO) and confirm the lack of opposition to the collection of cells, tissues and organs; sending documents to the prosecutor's office and confirming the lack of objection on the part of the prosecutor;
— transporting the decreased to the operating theatre and starting the procedure of collecting cells, tissues and organs for the transportation;
— transferring the corpse to the cold store.

Discussion

Organ transplantation in Poland and in the world — definitions of terms in the field of transplantation and the analysis of selected statistical data.

Transplantation is an effective, but sometimes the only method of treatment that can save the life of the patient with extreme organ failure. Recently, there has been significant progress in organ and tissue transplantation thanks to the efforts of not only surgeons, but also scientists in such fields of medicine as: immunology, microbiology and genetics. Nevertheless, the list of patients waiting for transplantation is very long. According to estimates, approximately 64.000 people throughout the European Union are currently waiting for it to happen. Every day 12 people in this group die [5].

The history of clinical transplantation, both in the world as well as in Poland, is the second half of the 20th century. The first successful organ transplant in the world took place in 1954, when American surgeons Joseph Murray and John Merrill performed a successful kidney transplant. In Poland, the first kidney transplant from a corpse took place in 1966; surgeon Jan Nielubowicz performed it [6]. The first heart transplant was carried out by Christian Barnard in 1967 in Cape Town (South Africa). In Poland, however, this procedure was successfully completed for the first time in 1985; Prof. Zbigniew Religa performed it. The breakthrough in Polish transplantology took place in 1983. An immunosuppressive drug called cyclosporin was applied, which prevents rejection of transplanted organs [7].

Any person who has not expressed objection and who has been diagnosed with brain death may be considered a potential organ donor in Poland. This is the so-called implied consent, legally regulated (opting-out system). Objection can be expressed in three forms: by entering an objection into the Central Register of Objections to collection of tissues, cells and organs; as a written statement against organ donation with a handwritten signature and as an oral statement pronounced in the presence of two witnesses with their original signatures [5, 8].

Organ donation from a living donor usually involves transferring one of a twin organs, because taking two would be tantamount to murder. This treatment requires consent to violate the so-called bodily integrity of man. In 2018, 40 kidney transplants and 23 transplants of liver fragments taken from another living person were performed in Poland. These treatments in other countries are performed to a much wider extent. In Poland, it accounts for 5% of all transplants, 30% in the USA and 50% in the Netherlands [5].

The Polish transplantology is supervised by the Organizational and Coordination Centre for Transplantation "Poltransplant". According to their data, the number of deceased donors in Poland in 2018 was 638, 498 of whom were actual donors of organs from whom organs or tissues were collected. In total, 1390 organ transplantations were performed. After a few years of stagnation, the number of such procedures in Poland has increased, but still on the National Waiting List according to data from December 2018 there were 1196 people waiting for the kidney transplant and 453 people for the heart transplant [5, 9].

In Poland, one person dies waiting for an organ transplant every five days. One must wait for the heart on average from 2 to 3 years, 8 months for kidneys, and 6 months for the liver. According to statistics regarding the number of transplants from deceased donors from all 28 European Union countries, Poland is on the 17th place, and we are behind not only Western European countries, but also Hungary, the Czech Republic and Estonia [1].

Ethical, Religious and Ideological Dimension of Organ Transplants

We are currently living in exceptional times. Progress in medical science is huge. Transplantology, just like many other branches of medicine, has evolved considerably. The enormous progress in organ transplantation has raised topics and spheres that have never had to be discussed before. That applies to the ethical, religious and ideological dimensions of organ transplants [2].

The ethical problem is that every person has the right to change their mind, and the lack of an entry in the Central Register of Objections can be negated by relatives and family, even though it is not allowed by

law. The difficulty is also caused by the fact that often the deceased during their lives did not express their opinion related to organ donation after their death. One of the important conditions for the lack of approval for organ procurement is the distrust of the society with regard to the medical definition of brain death and the procedures for its confirmation. This is due to the fact that the donor is usually a young person, previously healthy, who dies suddenly. It is extremely difficult for a family to understand the fact that their loved ones are dead, despite seeing signs of heartbeat on the monitor and breath resulting from artificial ventilation. It should also be kept in mind that the family always expects the improvement of health and recovery. In the Polish society, due to the special respect for body of the deceased, a large group of people do not agree to organ donation. They support their decision with the disapproval of corpse violation [8, 10].

Transplantology cannot be considered in isolation from socio-cultural conditions. This unique field of medicine arouses a lot of controversy and social concerns. However, it should be emphasized that due to the respect for human autonomy, only the person has the right to make decisions about their own body. Consent to donate organs after death to another human being is priceless [10].

The issue of transplantation is the subject of broad social interest, also from the point of view of religion. An attempt to look at transplantology from a cultural and religious perspective is a special task. This issue concerns people who are involved in specific religious and moral systems. They form the basis of their behaviour, a subordinated way of thinking, the implementation of beliefs, duties, orders and prohibitions. The diversity of the religious approach to the issue of transplantation focuses mainly on the guidelines and manner of recognizing death, consenting to the donation of organs, the method of their collection and respect for human corpses [11].

Judaism is one of the oldest religions in the world, which recognizes the preservation of human life as the highest value. Voluntary donation of one's organ to save the life of another human being is perceived by Judaism as a huge merit. The respect for the deceased organ donor is very important in this case [12].

Christianity is a religion which developed taking over the foundations and assumptions of human life from Judaism. Contemporary church teaching says that voluntary, unselfish and, above all, not offensive for the dignity of the donor and recipient of the organ donation is a wonderful and exceptional act [12].

In Islam, despite the fact that the International Assembly of Legal Sciences and the Muslim Organization of Medical Sciences have allowed the performance of transplants, there are no identical opinions on this subject. Sunnis allow transplantation in situations which will not affect the Muslim's dignity, when it is the only way to save lives. The donor is voluntary, must be a free person and cannot be sentenced to death. Shiites, the more radical followers of Islam, prohibit organ collecting from the corpse, except to save lives of another Muslim. To a large extent, acceptance of organ transplantation is determined by the economic status of a given Muslim country [11, 12].

Gypsies, American Indians and followers of Shintoism are against organ donation. Jehovah's Witnesses allow the possibility of organ transplantation, but only if the transplantation is preceded by complete rinsing of blood from the graft. In addition, blood transfusion cannot occur during surgery [12].

Legal and Organizational Foundations of Organs Collection and Transplantation in Poland and in the World

Every year, in Poland, approximately 1.500 organs are transplanted from about 500 deceased donors and approximately 50 kidneys and 20 liver fragments obtained from living donors. Similarly as in the whole world, also in Poland, organ transplantation is a recognized method of treatment. Nevertheless, transplantology requires optimal legal regulations and transparency of professionals more than any other medical discipline. Poland meets all the conditions in this respect. It is in the group of 6 European countries with the highest activity in the field of transplantology alongside Spain, France, Great Britain, Germany and Italy. Polish law is also compliant with the rules of the World Health Organization and European Union Directives [5, 13].

The key legal act which regulates and organizes the transplantation system in Poland is the Act on the Collection, Storage and Transplantation of Cells, Tissues and Organs of July 1, 2005, along with its consolidated text of May 11, 2017 and 24 executive regulations. The Organizing and Coordination Centre for Transplantation "Poltransplant" based in Warsaw, set by the Minister of Health in 1996 is responsible for the organization, coordination and supervision of the organ transplantation and transplantation program in Poland [5, 14].

Reporting potential organ donors to "Poltransplant" is a legal obligation of hospitals for which local transplant coordinators are responsible. Transplantation and storage of organs from dead donors as well as from living donors may take place in medical entities (hospitals) authorized by the Minister of Health to perform these activities. Currently, in Poland there are 70 transplantation centres and 23 tissue and cell banks [4, 15, 16].

The fundamental principle of organ procurement from a deceased donor around the world, respected by the legal systems of states, is the obligation to determine

the death of a donor. The definition in which brain death is synonymous with the death of an organism has been accepted by most countries in the world. The earliest it was legalized was in Finland in 1972, at the latest in 1992 in Japan [17].

"The Declaration on Artificially Extending Life and Determining the Point of Death", formulated on October 21, 1985 by the Pontifical Academy of Sciences, confirmed that brain death is synonymous with death of the individual [17].

The International Islamic Academy of Fiqh in 1986 issued the fatwa number 5, which on the basis of Sharia law stated that a person only then could be considered dead when the brain died, without the possibility of restoring its function [17].

The Council of Europe issues conventions which constitute guidelines and form the basis of law. In these conventions, it indicates respect for the individual's autonomy, its dignity and rights. The most important European documents include: European Convention for the Protection of Human Rights and Fundamental Freedoms (1950), European Social Charter (1961), Convention on the Protection of Human Rights and Dignity of the Human Being in the Field of Biology and Medicine (the so-called Bioethical Convention) — April 4 1997, Oviedo [5, 18].

On January 24, 2002, the "Additional Protocol to the Convention on Human Rights and Biomedicine, on the transplantation of organs and tissues of human origin" was adopted in Strasbourg. The document underlined the importance of equality in access to transplantation, fair and transparent allocation of organs and ensuring security for recipients [5].

Transplantation in the international arena is also dealt with by the World Health Organization, which in 1987 at the Fortieth World Assembly started work on the preparation of guidelines for the transplantation of human organs. They were approved in 1991 and in May 2010 — updated (WHO Guiding Principles on Human Cell, Tissue and Organ Transplantation). This document sets standards of conduct and indicates the need to recognize them in the Member States, as well as the need to implement them in the national legal order [5, 19].

Recognition and Pronouncement of Brain Death

Over the centuries, the diagnosis of death was based on the irreversible cessation of circulation and respiratory function. The development of medicine caused that we are able to maintain the function of other organs such as kidneys or the liver, despite the lack of breathing action after the restoration of circulation. Unfortunately, no form of therapy is effective in case of irreversible brain damage. Therefore, death of the brain means the death of a human being [17, 20].

Mechanisms of brain damage are divided into: primary — they include injuries, bleeding, neuroinfections and tumours, secondary — anoxia, infarction, poisoning and hypoglycaemia, as well as into supratentorial and sub-tentorial [20]. Recognition and diagnosis of brain death is a multi-stage process and is based on the demonstration of irreversible loss of its function. We distinguish:

— Stage I: Declaration of suspected brain death,
— Stage II: performing clinical tests confirming brain death [17, 20].

To suspect the brain death, long clinical observation is necessary. Appearance of features of global areflexia is considered as its beginning. The time of observation is at least 6 hours for primary brain damage and at least 12 hours for secondary damage. This is also the step of the so-called statements and exclusions, i.e. excluding the influence of important factors that depressingly affect the central nervous system. Those include: symptoms of intoxication, effects of some pharmacological agents, hypothermia, metabolic and endocrine disorders, neonatal period (under the age of 7 days). If clinical assessment does not determine factors affecting the patient's condition and it confirms areflexia and apnea in the course of brain injury of known aetiology, one can proceed to the second stage of brain death diagnosis [20, 21].

Detailed guidelines on how to conduct examination confirming the death of the brain can be found in the Announcement of the Minister of Health of 17th July 2007 act on the criteria and manner of determining the permanent, irreversible cessation of brain function [22]. Stage two of the diagnosis of brain death consists of two clinical tests aimed at demonstrating the absence of any stem reflexes and the disappearance of spontaneous respiratory activity. In the case of the primary supratentorial brain damage, the time interval between examinations should be at least 6 hours or 3 hours if an instrumental examination is performed. In the case of the primary infratentorial brain damage, time interval is at least 3 hours. It is also necessary to perform an instrumental examination. If there is secondary brain damage caused by such factors as cardiac arrest, ischemic stroke, hypoglycaemia, the interval between examinations is at least 24 hours or at least 3 hours if an instrumental examination is performed. In children, the time interval between tests varies, depending on the age of the child [3, 20, 21].

Clinical tests are performed by the head of the intensive care unit or a specialist appointed by him. In cases where a comprehensive clinical assessment is inapplicable, such as: damage in the craniofacial region, eyeballs or ear damage, additional instrumental

examinations are necessary. Instrumental tests that are legally permitted in Poland in the process of brain death recognition include: EEG, multimodal evoked potentials, cerebral angiography or transcranial ultrasonography with the Doppler option, as well as perfusion scintigraphy [20, 21].

The tests which indicate the cessation of the brain function include: lack of pupillary reaction to light, lack of corneal reflex, lack of spontaneous eye movements and lack of eye movements during caloric test, lack of motor reactions to painful stimuli from cranial nerves and lack of motor reaction within the face in response to painful stimuli from the somatic nerves, lack of gag reflex and coughing, lack of cerebro-ocular reflex, lack of respiratory drive (persistent apnea performed with the apnea test) [20, 21].

After all checks have been performed and after all the criteria have been met, a 3-person committee consisting of 3 specialist physicians — an anaesthesiologist, neurologist or neurosurgeon and the third physician of any specialization is appointed. The task of the committee is to examine the patient and pronounce brain death. The potential donor is reported by the hospital coordinator to POLTRANSPLANT, where a 24-hour on-call service is held by the national coordinator who supervises all reports. With the death diagnosis each deceased, in the mechanism of brain death, is considered as a possible donor of organs. This is the moment when one should consider whether the deceased has no absolute medical contraindications that would disqualify him as an organ donor. Another element is the verification of the deceased person's will on organ donation. This is the moment when it is necessary to check whether the deceased has not objected to the donation in forms permitted by Polish law [21, 23].

A different procedure concerns the determination of death after irreversible cardiac arrest. A detailed description of this procedure is included in the Announcement of the Minister of Health of August 9, 2010 act on the criteria and the manner of finding irreversible cardiac arrest. The absolute criteria to start this procedure include: deep body temperature (minimum 35°C), asystole or electromechanical dissociation lasting at least 20 minutes and in the case of children under 2–45 minutes, lack of pulse on the carotid and femoral arteries [24, 25].

If the physician states according to his medical knowledge, that cardiopulmonary resuscitation will not end in the patient's survival, neurological assessment and that of vital signs are performed within 5 minutes without resuscitation. This assessment is carried out according to the criteria for brain death diagnosis. The time of 5-minute observation is called the possibility of auto-reparation. This is the time when spontaneous recovery can occur, regardless of whether or not resuscitation has been performed. In case of confirmation of irreversible cardiac arrest, 2 physicians declare death according to the protocol. During this time, a transplant coordinator joins the care of a potential donor, whose task is to identify possible contraindications to organ donation and prepare a potential donor for the surgery. Before connecting the ECMO (Extra Corporeal Membrane Oxygenation), the coordinator checks the Central Register of Objections. Connection of a potential donor to the extracorporeal circulation is necessary to provide oxygenation of organs. Lack of circulation causes peripheral hypoperfusion and hypoxia. For this reason, there is a time limit which should last no longer than 4 hours until the organ is taken [24].

Nurse's Tasks in Caring of a Deceased Organ Donor and Their Families

When the patient is pronounced dead, the therapeutic goals change. The most important thing is to maintain organ homeostasis, that is, the best perfusion for keeping the organ oxygenated and functional. Proper care of a deceased organ donor is a multidirectional activity that requires knowledge, involvement of medical personnel and appropriate equipment. The work of a nurse with a patient who is probable and then a potential donor requires not only experience, having optimal professional skills, but also psychological predispositions in terms of resistance to stress and readiness to respond to complex emotions of the patient's family. The nurse's tasks in looking after a potential organ donor include, first of all, monitoring vital signs, taking medical tests ordered by the physician, maintaining fluid and electrolyte balance, observing diuresis, preventing hypothermia, observing proper ventilation and preventing infections [23].

The nurse controls such parameters of the deceased donor as: blood pressure measured, invasive blood pressure monitoring, heart rate, saturation, hourly diuresis, body temperature, cardiac output and peripheral resistance monitoring, capnography. All parameters are documented in the individual donor card. The nurse's tasks also include the assessment of body weight, height, measurement of the abdominal circumference of the donor at the level of umbilicus and measurement of the chest circumference at the level of xiphoid process. These measurements are also used to choose a transplant recipient. The nurse also collects the material for diagnostic tests, including blood, urine, respiratory secretions, swabs from the oral and rectal cavities and skin [23].

Correct oxygenation of blood is not only the effect of the ventilator's work, thanks to which mechanical

ventilation of a potential organ donor is carried out. According to the medical order, the nurse collects arterial blood gas tests. Nursing needs to be maintained to sustain airway patency by suction of secretions and controlling the settings of ventilator parameters. The nurse also evaluates the pressure in the cuff sealing the endotracheal or tracheostomy tube, clearing secretion from the space above the cuff of the tube, which reduces the risk of inflammation and aspiration. The head of bed should be raised to a 30-degree angle, which also minimizes the risk of aspiration [23].

Stabilization of cardiovascular parameters determines organ perfusion and ensures proper oxygenation of tissues. Unfortunately, pathophysiological changes which occur after brain death lead to fluctuations in blood pressure. Hypotension affects nearly 70% of potential donors. The work of modern monitoring systems for cardiovascular parameters must be supported by a constant observation of the patient by the nurse. Any cardiovascular dysfunction is reported to the physician. The nurse, when performing medical orders, administers circulatory support medications using infusion pumps as provided for in the treatment plan. Intravenous fluids are heated in order to counteract hypothermia of a potential organ donor [23].

The nurse actively participates in maintaining the donor's body temperature above 35°C. The correct body temperature stabilizes the circulation, prevents clotting disorders, which in turn is a condition for the proper functioning of organs. For this purpose, the nurse uses thermal blankets, administers heated fluids intravenously and into the stomach. It is also recommended to increase the ambient temperature [23].

Metabolic disorders and disorders of water and electrolyte balance may significantly limit the usefulness of organs for transplantation. Therefore, it is necessary for the nurse to collect the material for testing every few hours in order to determine the concentration of electrolytes. The nurse also observes diuresis in the context of a large amount of fluids being transfused to a potential organ donor. Diuresis disorders are reported to the physician on an ongoing basis. The hourly urine measurement is the most frequent. It is also necessary to monitor the level of glycemia due to the risk of hyper- or hypoglycaemia [23].

The potential organ donor is subject to intensive actions for preventing infections. It should be kept in mind that, like every patient in the intensive care unit, the donor has central venous catheters, cannulas, urinary catheter, nasogastric tube, is intubated and subjected to mechanical ventilation, and infusion pumps for medication are connected. Therefore, it is necessary to follow the rules of asepsis and antisepsis during procedures carried out by a nurse. It is necessary to have a full body bath, change of body position every two hours, oral hygiene, protection of the corneae from drying out [23].

Before the procedure of organ donation, the nurse usually prepares the surgical kit and assists the surgeon during the lymph nodes collection and collects blood samples. The collected material is sent to the tissue compliance laboratory for tissue typing and cross-match. This is a test necessary to best match the organ (pancreas or kidneys) of the donor to the recipient. Securing and organizing this examination is a joint task of the hospital coordinator and regional coordinator of kidney procurement and transplantation [26].

Also, nurse anaesthetist participation in the procedure of organ donation and transplantation cannot be overlooked. In turn, scrub nurse assists transplant surgeons during surgery.

The relation with the patient's family is an extremely important and at the same time very difficult task in the process of caring for a potential organ donor. Relationships with the family are built by the whole team, but the role of the nurse is unique due to the close and frequent contact. The donors' families usually look for support in the nurses. In most people, the death of a loved one triggers severe stress, feeling of guilt, pain, very negative emotions, anger and even aggression. It should be kept in mind that mourning is a process that is experienced by each person individually. For this reason, an important element of the relationship is not to limit the time spent by the family at the bedside of a potential donor and allow them to say goodbye to the deceased [17]. The family facing the death of a loved one is at the same time confronted with the opportunity to give life to another person. One cannot allow the family to feel guilty about it. In such moments it is necessary to create the atmosphere of understanding and security. This is an important task for which a nurse is responsible. It requires not only knowledge and empathy, but also control over one's own emotions [27].

Conclusions

The nurse, as a member of the interdisciplinary therapeutic team, actively participates in the qualification of the donor, organ transplantation and support for the patient's family before and after the transplantation. Nursing care for a potential organ donor focuses primarily on maintaining functions of organs and preventing hemodynamic instability. Thus, in some measure it becomes a kind of participation in the therapy of the recipient who is waiting for a gift — a new life.

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