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CARING FOR A POTENTIAL ORGAN DONOR AT AN INTENSIVE CARE UNIT - THE ROLE OF THE NURSE

OPIEKA NAD POTENCJALNYM DAWCĄ NARZĄDÓW W ODDZIALE INTENSYWNEJ TERAPII – ROLA PIELĘGNIARKI

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A – przygotowanie projektu badania | study design, **B –** zbieranie danych | data collection, **C –** analiza statystyczna | statistical analysis, **D –** interpretacja danych | interpretation of data, **E –** przygotowanie maszynopisu | manuscript preparation, **F –** opracowanie piśmiennictwa | literature review, **G –** pozyskanie funduszy | sourcing of funding

SUMMARY

Brain death causes irreparable loss of function of the brain as whole and is tantamount to the individual death. According to the governing laws in Poland, a committee composed of three consultants, including a specialist in anaesthesiology and intensive care and a specialist in neurosurgery or neurology, states the individual death. Stating brain death has occurred discharges doctors from their obligation to continue therapy.

In the event the organs can be harvested for transplant, after ruling out the objection of the deceased and medical counter indications, medical staff continues to care for the donor during the period of preliminary observation, diagnostics and establishing brain death, and later for the deceased, until the organs are harvested. It includes all activities, from monitoring to therapy, diagnostic and nursing activities.

Nurses play an important role in the team providing care to a donor. The nurse should have extensive knowledge about brain death, its course and results, as they play an important role in proper diagnostic procedure and providing proper care until the organs are harvested. Strict nursing supervision of the donor allows the staff to detect deviations in the functioning of the organism early.

The aim of this paper was to present the procedures concerning declaring brain death and portraying the role of a nurse in caring for a potential organ donor at an intensive care unit.

Conclusions. Proper procedure is paramount in harvesting good quality organs for transplantation and assuring their proper functioning later. It is worthwhile to note the role of the nurse in contacts with the family, as cooperation with the donor's family is an important aspect of the process, especially the ability to conduct difficult conversations.

KEYWORDS: care, organ donor, nurse

STRESZCZENIE

Śmierć mózgu jest przyczyną nieodwracalnej utraty funkcji mózgu jako całości i jest równoznaczna ze śmiercią osobniczą. Zgodnie z obowiązującym w Polsce prawem śmierć osobniczą stwierdza komisja złożona z trzech lekarzy specjalistów, w tym jednego specjalisty w dziedzinie anestezjologii i intensywnej terapii oraz jednego specjalisty neurochirurga lub neurologa. Stwierdzenie śmierci mózgowej zwalnia lekarzy z obowiązku kontynuowania terapii.

W przypadku możliwości pobrania narządów do celów transplantacyjnych po wykluczeniu sprzeciwu zmarłego i przeciwwskazań medycznych kontynuuje się opiekę nad dawcą w okresie obserwacji wstępnej, okresie diagnostyki i orzekania o śmierci mózgu, a następnie zmarłego, do czasu pobrania narządów. Obejmuje ona wszystkie czynności, począwszy od monitorowania po czynności terapeutyczne, diagnostyczne i pielęgnacyjne.

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W zespołowej opiece, jaką otacza się dawcę narządów, bardzo ważną rolę odgrywa pielęgniarka. Powinna ona mieć obszerną wiedzę na temat śmierci mózgu, jej przebiegu i następstw. Ma to istotne znaczenie dla prawidłowego przeprowadzenia procedury diagnostycznej, jak również opieki do czasu pobrania narządów. Intensywny nadzór pielęgniarski dawcy umożliwia wczesne wykrycie odchyleń w funkcjonowaniu organizmu.

Cel: Celem pracy jest przedstawienie procedur dotyczących orzekania o śmierci mózgowej i ukazanie roli pielęgniarki w opiece nad potencjalnym dawcą narządów na oddziale intensywnej terapii.

Wnioski: Od właściwego postępowania zależy jakość narządów pobranych do transplantacji i ich późniejsze funkcjonowanie. Warto zwrócić uwagę na rolę pielęgniarki w kontaktach z rodziną potencjalnego dawcy. Ważnym aspektem jest współpraca z rodziną dawcy, a szczególnie umiejętność prowadzenia rozmowy.

SŁOWA KLUCZOWE: opieka, dawca narządów, pielęgniarka

Background

Brain death causes irreparable loss of function of the brain as whole and is tantamount to the individual death. Brain centres regulate heart function, blood pressure, breathing, body temperature and metabolism and hormonal balance via the hypothalamo-pituitary system [1]. Patients with brain death symptoms show severe homeostatic imbalance which leads to circulatory arrest. Establishing brain death criteria allowed the medical personnel to stop persistent and pointless treatment, and coincided with the first successful attempts to transplant organs from living donors and facilitated rapid development of transplantology [1]. Nowadays, transplanted organs are more frequently harvested from brain dead donors [1], with each case treated as a multiorgan donor. Proper treatment administered to the donor is one of the main factors determining the proper functioning of the organ in the recipient later on.

Caring for a potential organ donor at an intensive care unit means providing care to a patient with brain death symptoms and covers the period of preliminary observation, diagnostics and establishing brain death, and later for the deceased, if the organs are deemed viable for harvesting for a transplant. It includes all activities, from monitoring to therapy, diagnostic and nursing activities. The period of caring for a donor also covers transportation to the operating theatre, when the care often intensifies, and the harvesting, until circulatory arrest [2]. Caring for an organ donor is effective when it is performed by a team, comprising of a coordinating doctor, transplantologists, and a nurse.

The aim of this paper was to present the procedures concerning declaring brain death and portraying the role of a nurse in caring for a potential organ donor at an intensive care unit.

Brain Death – Definition and Diagnosis

In the past establishing the moment of death was quite simple. Vital signs, such as breathing and circulation, stopped and all available modes of treatment had failed [2]. However, with the development of medicine, especially methods of sustaining life and transplantology, the so-called "traditional" definition of death is no longer sufficient. Death occurs in different types of tissues and systems at different rate. This means that some functions of systems or parts thereof can still be ongoing, while the others have already ceased. According to the new, modified definition, "irreversible loss of brainstem function means the death of the brain as a whole, however does not necessarily mean the instant death of other systems" [2].

According to the statistics maintained by the "Poltransplant" Coordination Centre, 90% of brain death cases are caused by primary trauma, with half of those cases caused by intracranial haemorrhage and the rest by cerebrocranial trauma. Secondary trauma constitutes 8–10% of cases. Around 2–3% of brain death cases are caused by central nervous system tumours [3]. It is estimated that 2,500 cases of brain death cases occur in Poland every year. In hospitals with high organ donor activity, the number of brain death cases oscillates around 1.2–2.5% of all hospital deaths [3].

The assessment criteria and process of declaring permanent, irreversible loss of brain functions is regulated by the Minister of Health in a notice published in the Official Gazette "Monitor Polski". The basic criteria for declaring brain death are establishing the etiology of the brain damage and excluding possibly reversible causes of the damage. These criteria are reflected in the stages of the process: establishing and excluding, and in the need to conduct two series of clinical tests, which are performed to determine the lack of clearly specified stem reflexes and permanent apnea. The rules and regulations currently in force are included in the Act of July 1st 2005 on harvesting, storing and transplanting tissue and organ cells, the so-called "transplantation act", and its amendments [4]. The Minister of Health's Notice of July 17th 2007 on the criteria and procedure of declaring permanent and irreversible loss of brain function (Monitor Polski no. 46) contains detailed rules and regulations on diagnosing brain death in Poland [5].

According to the Polish law [5], brain death is declared by a committee composed of three consultants, including a specialist in anaesthesiology and intensive care and a specialist in neurosurgery or neurology. Stating brain death has occurred discharges doctors from their obligation to continue therapy.

In the event the organs can be harvested for transplant, after ruling out the objection of the deceased and medical counter indications, medical staff continues to care for the donor until the organs are harvested.

Donor's Medical Records

The transplant coordinator is responsible for collecting medical records of the deceased donor which are pertinent to the transplant. Apart from standard records, including lab results, diagnostic imaging, and consultations, other documents are also required: protocol from the process of declaring brain death, protocol from the committee declaring brain death signed by all members, i.e. the three specialists (who cannot later participate in harvesting and transplanting the organs), a printout from the Central Objection Registry confirming no objection was stated singed by the director of Poltransplant, transplant coordination card, protocol of organ harvesting signed by the doctor or doctors performing the procedure and the recipient's card – protocol from the autopsy [6,7].

The Role of a Nurse in Caring for a Potential Organ Donor

A nurse caring for a patient who has been declared brain dead or a deceased whose individual death has been declared by a committee, has to have specialist knowledge about pathophysiological changes leading to brain death and its consequences. Nurses play a very important role in caring for a potential organ donor. They maintain strict nursing supervision, perform therapeutic, diagnostic and nursing activities, and participate in the works of the declaring committee.

Strict nursing supervision of the donor enables early detection of deviations in the functioning of the organism and prevention of circulatory arrest or ischaemic damage of the organs for transplant. Early detection of clinical symptoms of vegetative disorders which accompany the herniation process is of great significance for the quality of the organs and helps undertake proper course of action, i.e. maintaining proper perfusion and oxidation of the organs and tissues, so that they function properly after transplantation [8]. A nurse monitors and documents in the observation chart the basic vital parameters of a potential donor (pulse, blood pressure and body temperature), monitors the cardiovascular system and is vigilant for signs of cardiac dysrhythmia (bradycardia, tachycardia, hypotension and hypertension), assists the doctor in establishing a central venous catheter and an arterial line, and later maintains them. The nurse is also responsible for taking blood samples for laboratory, serology and microbiology testing, and performing gasometrical tests. Moreover, the nurse performs blood and blood product transfusions [3,9–11]. The execution of all these tasks has to comply with procedures and standards established in the given hospital. Moreover, the nurse participates in diagnostic tests (e.g.: ultrasound, computed tomography, angiography of the cerebral arteries), operates the cardio monitor and defibrillator, and the infusion and syringe pumps. The nurse prevents infections associated with intravenous therapies. Furthermore, the nurse changes the dressing on post-operative wounds, in accordance with principles of the aseptic technique [3,9–12].

The nurse is responsible for ensuring proper ventilation and maintaining patency of the airways. A potential organ donor is ventilated mechanically, which is why the nurse assesses the symptoms of mechanical ventilation complications via auscultation (listening for lack of or weakened sounds over the lungs), and is vigilant for signs of tracheal deviation, subcutaneous emphysema or airway obstruction. The nurse assesses the placement of the intubation tube (the tube slipping into one of the bronchi can cause the lung to collapse), observes and assesses discharge from the airways (amount, consistency and colour), supervises and ensures proper working of the respirator and other medical equipment, e.g. the suction for evacuating the airway discharge, the nebuliser [3,13]. Furthermore, the nurse performs the bronchial toilet, which improves the lung function, prevents atelectasis and respiratory tract infections. The suction is preceded by hyperoxygenation with 100% oxygen, lasting 30s. The suction is performed in sterile environment and should last no longer than 15s. After the procedure is completed, the lungs are expanded with several breaths taken with an Ambu bag [9,10].

An important element in caring for a potential donor is preventing urinary tract infections. The nurse performs the catheterisation of the urinary bladder in accordance with principles of the aseptic technique. They control the diuresis, the amount and quality of the excreted urine, and check the patency of the Foley catheter. The urine bags should be sterile, with closed drainage system, and properly emptied to prevent cross-contamination. The urine is drained via a faucet on the bottom of the bag, and if the bag is full and there is no faucet, the bag is changed for a new one, maintaining fully aseptic conditions [12].

Maintaining normal temperature can be difficult in cases of potential donors, as one of the consequences of brain death is loss of function of the thermoregulatory centre, lowered metabolism and, consequently lowered body temperature. The donor's temperature should be between 36.0 and 38.0°C [8].

Another significant element of nursing care provided to a donor are hygienic and general care activities, which include: caring for the skin and mucosae by keeping them clean, preventing skin irritation (especially in the groin, the armpits and scrotum in the case on men), caring for the eyes (regular washing with sterile water, applying protective gel, Vidisic, and using moisture chamber glasses), maintaining oral hygiene (every 3 hours using Aphtin oral rinse, chlorhexidine

oral rinse or octemidol mouthwash), preventing bedsores from forming (recognising risk factors, providing proper care, using facilities, frequently changing the position of the body and using an anti-bedsore mattress) [9–11].

The nurse also provides assistance to the family of a potential donor, which requires proper support, mainly psychological in the form of a conversation. Very frequently the families cannot handle the fact their loved one is dead [14]. The relations with the family and the course of the conversation are affected by a number of factors, e.g. the circumstances the accident occurred, the time from the accident, the relationship between a deceased and their family, the family's beliefs and views on death. Prior to the conversation, it is recommended to equip oneself with information which can affect its results, provide a calm room and time to conduct the conversation. The medical staff are responsible for the course of the conversation [14]. Regardless of the result, the final will of the family has to be respected.

Conclusions

According to the available prognoses, due to the constantly lengthening life span, there will be more and more patients with extreme multiorgan failures, with only means of treatment available for them being transplant [13]. Recently in Poland, the number of deceased donors has increased, but the mean waiting time between registering for a transplant and the operation is still several months [8].

Therefore, there is a need for comprehensive action aimed at increasing the number of transplanted organs. One of such undertakings is the optimisation of caring for a potential donor, where the nurse plays a significant part. A nurse caring for a potential donor on an intensive care unit is required to act as though caring for a living person. It is the nurse's knowledge and skills in providing strict supervision, and involvement in caring for the donor until the moment the organs are harvested that the quality and the functioning of the organs after the transplant depend on. That in turn, is the foundation of the recipient's quality of life after the procedure. The nurse must be aware of the donor's family, for whom they are often the only link with the deceased loved one that will donate organs for transplant.

However, it has to be noted that the solutions offered by the rapid development of modern medicine is not accompanied by legal provisions and with the society being ready. The most basic barrier in the development of transplantology is still the lack of viable organ donors [8].

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