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Kidney Transplantation and Nursing Care

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Abstract

Kidney transplantation is the transplantation of a healthy kidney from a living or cadaveric donor to people with chronic and end-stage renal failure. Kidney transplantation is an effective treatment for end-stage renal failure worldwide. After transplantation, it is important for people to get used to their new lifestyle, psychosocial status and medication compliance. For this reason, nurses providing quality and individualized care to patients during the whole process of kidney transplantation will support the patient and family to adapt to this process. In addition, nurses have important roles in early recognition and prevention of complications that may occur in the patient after surgery. In this review, which was prepared by reviewing the current literature on the subject, nursing care in renal transplantation will be summarized in the light of current knowledge.

Keywords: Transplantation, Kidney Transplantation, Nursing Care

Introduction

Kidney Transplantation

Chronic kidney disease is defined as abnormal renal function and progressive decline in glomerular filtration rate, with impairment of renal structure and function for more than three months. Kidney transplantation is the transplantation of a functional kidney from a living or cadaveric donor to an individual with chronic and end-stage renal failure. Today, kidney transplantation is the most effective treatment for end-stage renal failure in many countries around the world (1, 2, 3). The goals of kidney transplantation are to increase the survival time of the recipient, maintain the functions of the graft kidney, decrease the morbidity rate and improve the quality of life (4, 5). Kidney transplantation can be performed in all patients with a glomerular filtration rate of <15, diagnosed with stage 5 chronic renal failure and suitable for long-term immunosuppressive treatment and major surgery (6). hronic and untreatable infections, positive cross-match, new malignancies, expected patient life expectancy of less than one year, uncontrolled psychiatric diseases and active substance addiction are contraindications (6, 7). After transplantation, recipients need to adapt to life styles, drug compliance, changing social roles and emotional difficulties (8). Nursing care is important throughout the whole process of kidney transplantation. Patients need quality nursing care in the preparation of the patient and family for transplantation before surgery, during and after transplantation (5).

Preparation and Nursing Care Before Kidney Transplantation

Pre-transplant care of the living donor

The living donor should be educated about the risks of nephrectomy and the consequences of the procedure. If he/she decides to become a kidney donor, he/she must give his/her consent to donate organs without being pressured by anyone. The first tests for a living kidney donor are blood group determination and lymphocyte 'crossmatch' analysis. A detailed anamnesis of the donor is taken and a physical examination is performed. Complete blood count, extensive biochemistry tests, HIV, VLDL, hepatitis B and C serologies, CMV, glucose tolerance test in diabetic patients, urine analysis, free PSA and total PSA in male patients, pregnancy test (BETA Hcg) in female patients, protein and creatine measurement in 24-hour urine, chest radiography, upper abdomen and pelvic USG, renal scintigraphy, renal angiography and psychosocial evaluation are performed (9). The nurse cleans the donor's body, administers treatment according to the physician's order and checks and completes the patient's file for any deficiencies. The nurse instructs the patient on how to use the respiratory exercise device. On the morning of the operation, the nurse puts on the patient's compression stockings and operating room gown, verifies identity, ensures the removal of metals such as nail polish, dentures and jewelry, and takes the patient to the operating room (10).

Pre-transplantation Period and Care of the Recipient

After the patient is admitted to the hospital for surgery, the nurse ensures the patient's adaptation to the environment and the surgical process. Detailed anamnesis is taken and vital signs are

checked to evaluate whether the patient has any obstacles to surgery and immunosuppressive drug use. Blood group, human leukocyte antigens (HLA), panel reactive antibodies (PRA) and crossmatch test results are evaluated upon physician request to determine tissue type and compatibility before kidney transplantation. The patient is evaluated psychosocially before transplantation (11). Psychosocial evaluation includes assessment of the patient's mental health, ability to adapt to treatment and whether they have social support, history of substance and alcohol use and lifestyle. Therefore, the patient is educated preoperatively about post-transplantation treatments and immunosuppressive drug program, exercises, diet and important complications that may occur (such as rejection, infection, malignancy) (12). An important part of the preparation before kidney transplantation is obtaining the patient's consent for the operation. The nurse should check whether the patient's consent has been obtained before surgery. The patient who will undergo kidney transplantation may need to be dialyzed before surgery. Therefore, the nurse should ensure that hemodialysis or peritoneal dialysis is administered to the patient just before surgery, if necessary (11).

Nursing Care During Kidney Transplantation

The nursing process during surgery starts with the admission of the patient to the operating room, preparation of the patient and the operating room, taking the patient to the operating table, giving the appropriate position, monitoring vital signs, ECG for hyperkalemia and cardiac arrhythmias. Stress-induced hyperglycemia is common during kidney transplantation, especially in diabetic patients. For this reason, the nurse monitors blood sugar at frequent intervals. It is recommended that blood pressure should ideally be 130/80 mmhg and mean arterial pressure should be 60-70 mmhg. Hypotension may occur due to hypovolemia and may damage the graft. Therefore, diuresis should be monitored and hypothermia should be prevented. Perhaps the most important goal during surgery is to ensure adequate graft perfusion. For this purpose, hemodynamic and fluid administration management is important (3).

Care After Kidney Transplantation

Nurses have important responsibilities in early recognition and prevention of complications that may occur in the patient after surgery. Post-transplant nursing care includes hemodynamic monitoring, control of bleeding, monitoring of laboratory findings, control and care of the wound site, provision of fluid-electrolyte balance and administration of treatment (13).

Monitoring of life findings

In the first 12 hours after transplantation, vital signs should be monitored hourly, every 3 hours in the next 8 hours and then every 4 hours. Since an increase in body temperature may be a sign of rejection, infection, atelectasis, and dehydration, the nurse pays attention to the patient's body temperature and measures it frequently (11). Immunosuppressive treatment after transplantation has been reported to be effective in the development of hypertension. To control hypertension after surgery, the nurse pays attention to keep systolic blood pressure below 140 mmHg and diastolic blood pressure below 90 mmHg (14, 15).

Monitoring of fluid-electrolyte balance

To evaluate the functions of the graft kidney, the nurse monitors the patient's intake and output, daily weight and central venous pressure. The nurse administers intravenous fluids according to the physician's order and monitors the amount of urine at frequent intervals. The nurse pays attention to signs of hypervolemia and hypovolemia. In addition, the nurse closely monitors the electrolyte level of the patient after surgery (11). The nurse measures the weight of the patient daily and controls edema (16).

Administration of immunosuppressive drugs

Maintaining compliance with immunosuppressant group drugs and monitoring by healthcare professionals is of great importance in patients undergoing renal transplantation. Drug compliance is defined as both taking the drug and taking it at the right dose and at the right time (17). Nurses have important responsibilities in ensuring immunosuppression after transplantation. The most important condition for success in renal transplantation is the regular continuation of immunosuppressive treatment. Because of the side effects of immunosuppressive therapy, it is important to protect the patients from the sun. The nurse educates the patients about immunosuppressive drugs and their side effects. The nurse is responsible for the administration of these drugs, monitoring of blood drug levels and patient compliance with the drug (18). In studies, it has been reported that the level of anxiety decreased when renal transplant patients were educated about immunosuppressive drugs (19, 20).

Wound site monitoring

After renal transplantation, infection at the wound site and delayed wound healing are observed in patients due to the use of steroids and immunosuppressive drugs. The nurse checks the wound site at least twice a day for signs and symptoms of infection and monitors for wound separation. The nurse also monitors the drains in the wound every 8 hours. The nurse performs wound care and ensures timely administration of antibiotics ordered by the physician (11).

Monitoring of gastrointestinal system functions

In ESPEN Nutrition Recommendations in Surgical Patients (2017), normal food intake or enteral nutrition is recommended in the early post-transplantation period within 24 hours as strong evidence (1). The nurse evaluates abdominal distension, flatulence and bowel movements in the patient after transplantation. Nausea, vomiting and constipation after renal transplantation usually develop due to the use of narcotic analgesics. For constipation, fluid and high fiber intake should be increased. In addition, symptoms related to gastrointestinal tract irritation may be observed in the patient due to steroid use after transplantation. For this reason, proton pump inhibitors should definitely be included among the drugs used after transplantation and the nurse should administer them regularly (11, 21).

Monitoring of respiratory system functions

The patient is monitored frequently for respiratory tract infections that may develop due to

immunosuppression after kidney transplantation. The nurse monitors respiratory characteristics, depth, number, type and oxygen saturation. The patient's oxygen saturation should be >92%. Cough and deep breathing exercises should be performed preoperatively and postoperatively, and adequate hydration, frequent position changes and early mobilization should be ensured by monitoring the patient's output (20).

Monitoring the psychosocial situation

It is known that patients undergoing any kind of transplantation, including the renal, suffer from physical and psychological changes (22). Therefore, the psychosocial status of the patient after transplantation is closely monitored by the nurse in collaboration with psychologists and social workers (11). Nursing interventions to ensure psychosocial adaptation in patients after kidney transplantation;

- Providing trainings on the treatment and care of the patient in centers where kidney transplantation is performed,
- To explain to patients the importance of regular implementation of recommended medical treatment and care and the importance of having health checks as planned in order to reduce the development of complications in patients after kidney transplantation,
- Establishing contact with voluntary organizations to provide psychological, social and economic support for patients and linking patients with these organizations,
- Allowing the patient to cry, as crying can express feelings of sadness, hopelessness and unhappiness,
- Allowing the patient to take as much responsibility as possible for decisions about his/her care, as the patient may experience a sense of powerlessness,
- Allowing the patient to express his/her feelings of anger appropriately and supporting him/her to use appropriate coping techniques related to anger (22, 23).

Follow-up of complications

The most common complications after renal transplantation are acute tubular necrosis, rejection, infection and complications related to surgery. It is extremely important for the nurse to follow up the patient in terms of these complications in the post-transplantation period (11).

Acute tubular necrosis should be monitored in terms of increased BUN and serum creatinine, hypermagnesemia, hyperphosphatemia, hyperpotassemia and anuria. The patient should be monitored for signs and symptoms of pulmonary edema and edema (24).

Rejection; Rejection is observed in three forms as hyperacute (within 0-24 hours), acute (within 3 months) and chronic (years after the 3rd month). The patient is educated about the signs and symptoms of rejection: fever, fatigue, pain in the right upper abdomen, loss of appetite, nausea, vomiting. The nurse monitors the patient's blood plasma level and drug side effects. The nurse inquires whether the patient is complying with the time and dose of medication, and monitors physical signs of drug side effects such as tachycardia, swelling of the gums, and trembling

hands. The nurse monitors the patient's daily weight (25).

Infection; Post-transplant patients are at high risk for infection due to immunosuppressive drug use (1). The most common infection after renal transplantation is urinary tract infections with a prevalence of 35% (26). Chills, increase in body temperature, tachycardia, tachypnea and an increase or decrease in leukocytes are among the signs and symptoms of infection. Infection may also develop through the urinary system, respiratory system, surgical field and other sources. Urine leakage during the anastomosis process may cause peritonitis in these patients receiving immunosuppression. as it can lead to the development of a disease. The nurse pays attention to the use of aseptic technique and avoiding unnecessary invasive procedures during dressing change. The patient and his/her family are educated about the importance of hand washing. Leukocyte count is closely monitored. Since the incidence of bacteriuria will be high in the early and late periods of organ transplantation, frequent urine cultures should be obtained (1, 26).

Discharge Training

Education of the individual and his/her family during preparation for discharge is the responsibility of the nurse. Discharge education is an important process that improves the patient's quality of life. Nurses help individuals adapt to changes in lifestyle by providingdischarge education that patients need (13). In this process, the nurse should evaluate the patient's post-transplantation learning skills, plan and implement a patient-specific education and information program and evaluate the results. In discharge education, the purpose of use, dose, route of administration and side effects of all drugs used after transplantation are explained. When the patient notices the signs and symptoms of rejection, he/she should immediately go to the hospital. The patient is told the importance of hygiene and hand washing, and that he/she should not use public transportation for at least 3 months after surgery. The patient is informed that he/she should monitor his/her weight for at least 3 weeks after leaving the hospital and should attend hospital appointments regularly (11, 18).

Conclusion

In conclusion, nurses have important roles and responsibilities in the whole process of the surgical period in patients undergoing renal transplantation. It is very important for nurses to provide education and counseling to the patient for the protection of the graft organ, early recognition of signs and symptoms of rejection, and prevention of complications. Quality nursing care provided by nurses significantly increases the success of transplantation.

Disclosure Statement

The author declare that they have no conflict of interest.

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