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TASKS OF A NURSE IN THE CARE OF A PATIENT WITH UROLITHIASIS TREATED WITH PERCUTANEOUS NEPHROLITHOTRIPSY

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ABSTRACT

Introduction. Contemporarily urolithiasis is a serious problem in nephrology. This disease is conditioned by many factors, including climatic, geographical, ethnic and genetic. The most important ones, however, include diet and the composition of urine excreted. Urolithiasis can

be symptomatic and asymptomatic. There are many methods of its treatment. The most commonly used methods are pharmacological and surgical ones, and modern treatment methods are also on their increase. Untreated urolithiasis can lead to many complications.

Aim. The aim of the study was to determine the tasks of a nurse in the care of a patient with urolithiasis treated with percutaneous nephrolithotripsy.

Methods and materials. The individual case method was used in the study, using the following research techniques: nursing interview, observation, measurement and documentation analysis. The research tools used for the study include the Individual Nursing Care Card, the Visual Analogue Scale - VAS, risk of postoperative nausea and vomiting- the Apfel score.

Findings. Nine nursing diagnoses based on the patient's health issues were made during the study process.

Conclusions. The nursing problems concerning the patient result from surgery and hospitalization.

Key words: nursing care, urolithiasis, percutaneous nephrolithotripsy, patient

Introduction

Urolithiasis is a medical condition involving the formation of deposits in the excretory system, consisting of substances that are a normal or pathological component of excreted urine. It is one of the most common urinary tract diseases, it affects nearly 1% to 20% of the population, depending on the geographical location, climate, a given country, an ethnic group, genetic tendencies or cultural conditions, including a diet. The analysis of available epidemiological data indicates a relationship between the incidence of urolithiasis in relation to gender and age. Most often it affects people between 30 and 50 years of age, men develop the disease much more often, compared to women in a ratio of 3:1 [1].

Urolithiasis is classified into individual types, depending on the chemical structure of deposits present in the urinary system. Its most common type is oxalate-calcium or oxalate urolithiasis (> 70%). There are also other types of urolithiasis, such as phosphate (7-10%), phosphate-magnesium-ammonium (struvite) (10%) one, uric acid one (5-10%), and also cystine and xanthine type of urolithiasis (2%) [2].

The causes of urolithiasis should be traced in lifestyle-related factors, i.e. low fluid intake, mainly during periods of increased demand (physical exertion, fever, heat, vomiting, diarrhea) and a diet rich in protein, vitamin D3, vitamin C and calcium preparations. What also affects the development of the disease is the medications taken, e.g. glucocorticosteroids and the occurrence of concomitant diseases, e.g. hyperparathyroidism and Crohn's disease. Another main predisposing factor for urolithiasis is disorders of the outflow of urine, leading to its retention in the urinary tract, as well as congenital ones (e.g. narrowing of the pelvic-ureter passage) or acquired (e.g. during urinary tract procedures, or resulting from some other diseases and injuries) anatomical defects of the urinary system [3].

The formation of urinary calculi within the urinary tract may also be triggered by all quantitative and qualitative deviations in the biochemical composition of urine excreted: excessively thick urine, a low or too high pH level, hypercalciuria, hyperoxaluria, hyperphosphaturia, hyperuricosuria, magnesium deficiency, cystinuria, hypocitraturia [4].

Urolithiasis can often be asymptomatic. In such cases, patients are diagnosed for other medical indications during routine examinations or imaging examinations, e.g. abdominal ultrasound [5]. Usually, it is with the onset of a kidney colic attack that the disease is diagnosed, which is referred to as severe, spasmodic pain in the lumbar region, radiating to the external genitalia, lower abdomen, back and groin. Its occurrence is associated with a change in the position of the deposit in the urinary system and its displacement. A kidney colic attack may be accompanied by symptoms such as nausea, vomiting, fever, profuse sweating, tachycardia, hypertension, and consciousness disorders [6]. Other symptoms such as hematuria or recurrent urinary tract infections may also occur in the course of urolithiasis.

Among the complications of urolithiasis one can distinguish: acute complications (acute pyelonephritis, hydronephrosis, acute retro-renal renal failure, pyonephrosis) and chronic complications (hypertension, chronic renal failure, recurrent UTI and chronic pyelonephritis) [7].

Diagnostics of urolithiasis consists of many tests, including laboratory tests (general analysis of urine, creatinine level, phosphate minerals, calcium, total protein, uric acid, alkaline phosphatase, parathyroid hormone in the serum). In the case of recurrent nephrolithiasis, it is important to do tests for lithogenic and anti-lithogenic substances in diurnal urine collection as well as a cystine screening test [8]. It is also recommended to perform imaging examinations such as: the abdominal cavity plain radiography (90% of the

deposits are contrasting), ultrasound (USG), computed tomography (CT), magnetic resonance imaging (MR) or urography [9].

The treatment of urolithiasis can be divided into conservative treatment, a surgery and a procedure. Currently, medicine has many modern methods that allow removal of urinary calculi located in the urinary tract. These methods include: the extracorporeal shock waves lithotripsy (ESWL), ureterorenoscopy (URS), or percutaneous nephrolithotripsy (PCNL) as well as traditional surgical methods.

Aim of the study

The aim of this study is to determine the tasks of a nurse in the care of a patient with urolithiasis treated by percutaneous nephrolithotripsy.

Methods and materials

The method of an individual case was used for the study incorporating the following research techniques: the nursing interview, observation, measurement and documentation analysis. The research tools used for the study included the Individual Nursing Care Card, the Visual Analogue Scale - VAS, risk of postoperative nausea and vomiting- the Apfel score. The study was conducted at the Urology and Urologic Oncology Clinic at the Independent Public Clinical Hospital No. 4 in Lublin.

The subject of the study was a patient after a urolithiasis procedure, by the percutaneous nephrolithotripsy (PCNL) method. The patient's consent to the examination was obtained, and she was notified of anonymity and voluntary participation in it.

Case study

The patient, 56, secondary education, works as a cleaner, married, has two daughters. The whole family stay abroad, the patient lives alone in the city in Poland, and she estimates the living conditions in a detached house as good ones. The person taking care of the patient is her brother. The interview shows that the family does not present any problems.

The patient was admitted to the Urology Clinic as planned due to the presence of urinary calculi in the lower renal calyx. She learned about her illness about a month earlier because she had an incident of kidney colic attack. An additional symptom was also the presence of blood in the urine. The patient was then taken to the Hospital in Ostrowiec Świętokrzyski, administered analgesics and antispasmodics, and also had a non – iodinated

contrast urography and abdominal ultrasound performed. Diagnostic tests showed the presence of a 2 cm in diameter of urinary tract deposit situated in the left lower renal calyx. The patient was discharged home with a recommendation to appear for a scheduled percutaneous nephrolithotomy (PCNL) procedure at the Urology Clinic in Lublin.

The abdominal ultrasound and abdominal x-ray were performed at the clinic. The examinations confirmed the diagnosis of staghorn nephrolithiasis in the left kidney. A number of laboratory tests were also carried out, such as: TSH level, blood count, urine analysis, urine culture and cross-match test.

The night before the procedure, the patient reported difficulties with falling asleep and sleeping, medications were administered in accordance with the instructions of the doctor on duty.

On the second day of hospitalization, after preparing the patient for the procedure, percutaneous nephrolithotripsy (PCNL) was performed, during which the deposits were removed from the kidney. The procedure was performed under general anesthesia and ran without any complications. After the procedure, the patient had a urinary bladder catheter inserted, a nephrostomy drainage tube was led through the postoperative wound, and a ureter tube was inserted. The wound and drainage were put a dry, sterile dressing on. The procedure took about two hours. An hour after the surgery, the patient complained of pain. She was also feverish and her feet and eyelids were edematous. There occurred blood in the urine and nausea with vomiting. Appropriate pharmacotherapy was administered to alleviate the ailments. During the examination, vital signs remained within physiological norms.

Findings

The following nursing diagnoses were formulated from the obtained data collected by means of observation, appropriate measurements performed, interview and data analysis:

1. Problems with falling asleep due to anxiety before the procedure.
2. Pain in the operated area, caused by disruption of tissue continuity, the presence of drainage tube and skin sutures.
3. The occurrence of nausea and vomiting due to the use of general anesthesia.
4. Risk of infection of the operated site due to disruption of tissue continuity.
5. Edema of the feet and eyelids due to circulatory disturbance resulting from immobilization after the surgery.

6. The risk of bleeding due to the presence of drainage and ureter tubes.
7. The occurrence of the elevated body temperature due to disruption of tissue continuity.
8. The risk of the urinary tract infection.
9. Lack of knowledge regarding dietary recommendations and physical exertion after urolithiasis procedure.

Diagnosis no.1: Problems with falling asleep due to anxiety before the procedure.
Aim: To facilitate rest of the patient in the period before surgery.
Care plan:

- Talking to the patient and dissipating fears related to the procedure;
- Proper preparation of the room for sleep, performing 15-minute ventilation before bedtime;
- Ensuring silence and dimming available lights;
- The administration of pharmacotherapy following the order of the doctor.

Result: The patient fell asleep, rest guaranteed.

Diagnosis no. 2: Pain in the operated site, caused by disruption of tissue continuity, the presence of a drainage tube and skin sutures.
Aim: Relieving pain in the postoperative period.
Care plan:

- Calming the patient and explaining the cause of pain;
- Providing the patient with proper conditions to rest in the room;
- Monitoring the postoperative wound, drain and sutures;
- Administration of anesthetic following the doctor's order.

Result: The pain subsided.

Diagnosis no. 3: Occurrence of nausea and vomiting due to administration of anesthetic drugs during general anesthesia.
Aim: Minimizing the occurrence of nausea and vomiting in the postoperative period.
Care plan:

- Putting the patient in a semi-Fowler position to minimize the occurrence of

symptoms;

• Ensuring silence for the patient;

• Giving the patient a kidney-shaped basin and lignin;

• Administration of antiemetic drugs following the order of the doctor.

Result: Nausea and vomiting subsided.

Diagnosis no. 4: Edema of the feet and eyelids due to circulatory disturbance resulting from immobilization after the surgery.

Aim: Reduction of edema until the patient is discharged from the ward.

Care plan:

• Diuresis monitoring;

• Monitoring of the patient's body weight;

• Visual inspection of edematous areas;

• Applying a low-sodium diet;

• Administering appropriate pharmacotherapy following the doctor's order.

Result: Edema reduced.

Diagnosis no. 5: Risk of infection of the operated site due to disruption of tissue continuity.

Aim: Minimalization of the risk of postoperative wound infection until it heals.

Care plan:

• Observation of the operated site for signs of inflammation;

• Systematic wound monitoring and dressing change;

• Monitoring secretion from the wound;

• Washing the postoperative wound and the surrounding skin care.

Result: No infection of the operated site.

Diagnosis no. 6: The risk of bleeding due to the presence of drainage and ureter tubes.

Aim: Prevention of bleeding during the patient's stay in the ward.

Care plan:

• Monitoring blood pressure;

• Monitoring the wound dressing;

• Observation of secretion in the drainage tube;

• Monitoring the patient’s awareness.

Result: There was no sign of bleeding.

Diagnosis no. 7: Occurrence of the elevated body temperature due to disruption of tissue continuity.

Aim: Decreasing the body temperature.

Care plan:

• The use of cold compresses in the area of large blood vessels;

• Ensuring an appropriate microclimate (temperature and humidity);

• Assessment of vital signs;

• Administering appropriate pharmacotherapy following the order of a doctor.

Result: The elevated body temperature was decreased.

Diagnosis no. 8: The risk of the urinary tract infection.

Result: Prevention of the urinary tract infection.

Care plan:

• Information on the importance of compliance with personal hygiene;

• Visual inspection of the contents of the urinary sac and the perineum;

• Informing the patient on the necessity to report alarming signs of infection.

Result: No urinary tract infection occurred.

Diagnosis no. 9: Lack of knowledge regarding dietary recommendations and physical exertion after urolithiasis procedure.

Aim: Increasing the patient's level of knowledge regarding dietary recommendations.

Care plan:

• Discussing dietary principles after the urolithiasis procedure with the patient;

• Informing the patient about physical exertion after the procedure;

• Showing the patient sample menus;

• Enabling the patient to contact the dietitian.

Result: Increasing the patient's level of knowledge.

Conclusions

1. After the urolithiasis procedure the patient encounters postoperative pain caused by disruption of tissue continuity, feels nausea and is affected by profuse vomiting which are accompanied by elevated body temperature, edema on the feet and hands, anxiety and blood in the urine.
2. The prevailing problem accompanying the patient is a sense of fear and anxiety related to the nature of the disease, hospitalization, recovery period and insufficient knowledge.
3. The patient does not have a sufficient knowledge level and skills to follow the lifestyle recommendations after the urolithiasis procedure.
4. After the procedure, the patient is full of emotions, most often it is a sense of fear and anxiety connected with hospitalization and a surgical procedure. At present the patient's emotional condition is very good.

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