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Nursing Care for Mrs H Who Has Chronic Renal Failure with Hypervolemia Nursing Problems in The Bougenville Room General hospital Dr. H. Koesnadi Bondowoso

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ABSTRACT
Background: Chronic Kidney Disease (CKD) is damage to the kidneys both in structure and/or function that lasts for 3 months or more. The purpose of this writing is to carry out Nursing Care for Clients Experiencing Chronic Kidney Disease (CKD) with Hypervolemia Nursing Problems.
Method: This study used a case study research design with one of the clients who experienced Chronic Kidney Disease (CKD) with Hypervolemia nursing problems in the Bougenville Room General hospital Dr. H. Koesnadi Bondowoso, starting from May 15, 2023 – May 17 2023, data collection was in the form of interviews, observations, physical examinations, documentation studies and questionnaires.
Results: The results of this study were obtained from the study, namely hypervolemia in accordance with the theory, diagnosis according to the theoretical review. In nursing interventions according to the circumstances experienced by the client, while the implementation refers to predetermined interventions and evaluation refers to the outcome criteria that have been set in accordance with the theory. Clients are expected to be able to keep physically fit by exercising, keeping blood sugar levels normal, keeping blood pressure normal.
Conclusion: Patients with chronic kidney disease often experience hypervolemia which is accompanied by an increase in laboratory results in the form of creatinine and ureum levels. then management is needed in improving patient hydration in the form of input and output as well as improving renal physiological anatomy through haemodialysis intervention in patients.

Keywords: *Hypervolemia; Chronic Kidney Disease (CKD)*

Introduction

Chronic renal failure is damage to the kidneys both in structure and or function that lasts for 3 months or more. Decreased kidney function causes the kidneys to be unable to maintain metabolic, fluid and electrolyte balance which can result in uremia; retention of urea and other nitrogenous wastes in the blood (Bare & Smeltzer, 2020).

Chronic kidney failure disease kills 850,000 people every year, this figure shows that chronic kidney failure disease is ranked 12th highest as a cause of death worldwide (WHO, 2020). The prevalence of chronic kidney failure in Indonesia has increased in 2018 to 0.38% or as many as 713,783 people based on a doctor's diagnosis in the population aged 15 years and over. The highest prevalence was in North Kalimantan province with a percentage of 0.64%, followed by North Maluku province with a percentage of 0.56%, and Bali Province also increased from 0.2% in 2013 to 0.44% in 2018. While West Java, Central Java, DI Yogyakarta and East Java were each 0.3% in 2018. Based on the above prevalence, chronic kidney failure disease is found more in men than women, in 2013 it was 0.3% in men and 0.2% in women, while in 2018 it was 0.42% in men and 0.35% in women (Indonesian Ministry of Health, 2020).

One to three out of 10,000 people have chronic kidney failure in East Java (East Java DHO, 2019). Bondowoso Regency itself, especially at the Dr H. Koesnadi Bondowoso general hospital, the number of patients with chronic renal failure increased in 2019-2021, 173 cases in 2019, 163 cases in 2020, 127 cases in January 2021 to April 2021, and increased in 2021 patients with chronic renal failure (Introduction to Koesnadi general hospital, 2021). Chronic renal failure can cause both medical and nursing problems. In nursing problems, chronic renal failure can cause nursing problems such as acute pain, activity intolerance, excess fluid volume (hypervolemia), nausea and vomiting, and gas exchange disorders. The most common in patients with chronic renal failure is excess fluid volume (hypervolemia). Based on the theory of the Indonesian Kepearawatan Output Standard, the outcome criteria to be achieved in nursing care for clients with Chronic Renal Failure with Hypervolemia are: Fluid Balance; 1) Fluid intake (5) increased, 2) Edema (5) decreased, 3) Blood pressure (5) improved, 4) Mucous membranes (5) improved, 5) Skin turgor (5) improved (PPNI, 2019).

Based on the Indonesian Nursing Intervention Standard theory, efforts that can be made to prevent Chronic Kidney Failure with Hypervolemia are Observation Hypervolemia Management: Check for signs and symptoms of hypervolemia (eg orthopnea, dyspnea, edema, increased JVP / CVP, positive

hepatojugular reflex, additional breath sounds), identify the cause of hypervolemia, monitor fluid intake and output, monitor signs of haemoconcentration (eg sodium levels, BUN, hematocrit, urine specific gravity), monitor signs of increased plasma oncotic pressure (eg increased protein and albumin levels). Therapeutics: weigh daily at the same time, limit fluid and salt intake, elevate the head of the bed 30-40'. Education: advise to report if urine output <0.5 mL/kg/hour in 6 hours, advise to report if weight gain >1kg in a day, advise how to measure and record fluid intake and output, teach how to limit fluid. Collaboration: collaboration in diuretic administration, collaboration in replacing potassium loss due to diuretics, collaboration in providing continuous renal replacement (CRRT) (PPNI, 2018).

Method

This research is case study research, which is a study that explores a problem or phenomenon with detailed boundaries, has in-depth data collection and includes a variety of information. Case studies are limited in time and place, and cases are studied in the form of individual activity events. This case study is a study to explore the problem of nursing care for Mrs H who has chronic renal failure with the problem of hypervolemia in the Bougenvil Room of Dr. H. Koesnadi Bondowoso General Hospital". The inclusion criteria in this study were clients who met the criteria: 1) Clients diagnosed with Chronic Renal Failure; 2) experience hypervolemia; 3) Sign informed consent.

Research Population

The target population in this study was a client named Mrs H, female gender, aged 67 years in the Bougenvil Room of Dr H. Koesnadi Bondowoso General Hospital.

Place and Time of Research

This study was conducted in the Bougenvil Room of Dr. H. Koesnadi General Hospital Bondowoso in 2023 for 3 days from 15 May - 17 May 2023.

Data Collection

The data collection methods used included: 1) Interviews (anamnese results contain client identity, main complaints, history of present illness, history of past illness, family history of illness and others) data sources obtained from clients, families and nurses; 2) Observation and physical

examination (with the approach of inspection palpation percussion and auscultation) on the client's body system; 3) Document study and questionnaire (the results of the examination of relevant client data).

Research Ethics

This research has been ethically tested at the Health Research Ethics Commission of the Faculty of Health, Muhammadiyah University of Jember with number NO. 0195KEPK / FIKES / XII / 2023.

Results

Date/Hours	Data analysis
May, 15 2023/ 2023	D.0022 Hypervolemia associated with excess fluid intake characterised by peripheral oedema Subjective data = - Objective data = 1. There was a decrease in consciousness with GCS 314 2. Client is delirious 3. The client's upper and lower extremities have peripheral oedema, CRT >3 seconds 4. Abdomen appears slightly distended 5. Dark black urine (haematuria present) with urine collection = 500 cc/24 hrs. 6. Catheter inserted 7. NGT inserted 8. Client appears pale 9. Dry lip mucosa, chapped lips, dry tongue 10. Skin is palpably dry 11. Conjunctiva is anemic 12. Attached O2 nasal 4 lpm with semifowler position, rapid breathing pattern (dyspnoea), presence of chest retraction 13. There are abdominal lesions from scratching 14. Warm acral 15. Moderate skin turgor >3seconds 16. Pitting oedema 2+ (disappears within 12 seconds) 17. Body weight = 69kg (Body weight when the client had not lost consciousness) 18. Vital signs = temperature: 36.5'C, BP: 154/80 mmHg, Pulse: 69x/min, Respiration rate: 24x/min, Spo2: 100%, Haemoglobin (HGB) 7.0 g/dl, Erythrocytes (RBC) 2.33 10^6/uL, Hematocrit (HCT) 20.0%, Platelets 88 thousand/mm3, Creatinine 10.34 mg/dl, Urea 240 mg/dl, 19. Fluid Balance = Intake - (Output + IWL),

Intake => Injection: 67 cc
NGT: 600 cc
Infusion: 1000 cc
Air Mtabolism: 345 cc
+
2012 cc/24 hours
Output => Urine: 500 cc
IWL =15 cc x 69 kg = 1035 cc
fluid balace: 2012 - (500 + 1035) = 477 cc/24 hours

Nursing Diagnosis

The nursing diagnosis raised by the researcher is hypervolemia associated with excess fluid intake marked by peripheral edema (D.0022).

Nursing Intervention

Nursing planning refers to the SKLI (Indonesian Nursing Intervention Standards) book for Hypevolemia Management (I.03114) including observation of signs and symptoms of hypervolemia, identification of causes of hypervolemia, monitoring haemodynamic status, monitoring fluid intake and output, monitoring signs of haemoconcentration (e.g. sodium levels, BUN, hematocrit, urine specific gravity), teaching how to limit fluid intake, collaborative administration of diuretics (PPNI, 2018).

Nursing Implementation

Check for signs and symptoms of hypervolemia. GCS 314, peripheral oedema on both upper & lower extremities, slightly distended abdomen, dyspnoea (+), nasal O2 4lpm, haematuria (+) (urine collection = 500cc/24 hours), anemic conjunctiva, dry lip and tongue mucosa, chapped lips, CRT >3 seconds, moderate skin turgor >3 seconds, pitting edema 2+ (disappears within 12 seconds), Body Weight = 69 kg.

Identify the cause of hypervolemia. The client's family said, before entering the hospital the client was actively working so rarely drank water but often ate more with a body weight of 68 kg, when entering the hospital the client ate less often (± 2 spoons / day) and drank more. And the client's high creatinine and urea levels which can be seen from laboratory tests

NMonitor haemodynamic status= BP = 154/80 mmHg, Pulse = 59x/min, Temperature = 36.5'C, Respiration Rate = 24x/min, Spo2 = 100%, Acral warmth, weak palpable pulse, faint heart sounds, no additional breath sounds, CRT >3 seconds, thick black urine (500cc/24h).

Monitor fluid intake and output by calculating drug dose/injection

- Inj. Meropenem 2x1g = 1000mg/1000mg x 10ml = 10 ml x 2 = 20 ml
- Inj. Tranexamat 3x500mg = 500 mg/500mg x 5ml = 5 ml x 3 = 15 ml
- Inj. Omeprazole 2x40mg = 40mg/40mg x 10 ml = 10 ml x 2 = 20 ml
- Inj. Citicolin 3x500mg = 500mg/500mg x 4 ml = 4 ml x 3 = 12 ml

Total injection is 67 cc/24 hours

- Sonde 6x100cc = 600 cc
- Infusion 14 drops/min 500cc/24 hours = 1000 cc/24 hours
- AM (Metabolic Water) 5x Body Weight = 5 x 69kg = 345 cc

Fluid Balance = 2012 - (500 + 1035) = 477 cc/24 hours

Monitor for signs of haemoconcentration (e.g. sodium level, BUN, haematocrit, urine specific gravity) with results of haemoglobin (HGB) 7.0 g/dl, Erythrocytes (RBC) 2.33 10^6/uL, Hematocrit (HCT) 20%, Platelets 88 thousand/mm3, Creatininin 10.34 mg/dl, Urea 240 mg/dl.

Evaluation

The problem in Mrs H is resolved seen from the objectives and outcome criteria, namely: Urine output increased enough (4), peripheral edema increased enough (4), blood pressure improved (5). Evaluation is the last step of the nursing process by identifying the extent to which the objectives of the nursing plan are achieved or not. Evaluation of overall actions to assess the success of actions taken and describe progress in achieving predetermined goals this evaluation usually uses the "SOAP" format.

Discussion

Renal failure is a condition where the kidneys lose the ability to maintain the volume and composition of body fluids under normal food intake. Renal failure is usually divided into two categories: chronic and acute (Nurarif & Kusuma, 2013). Chronic Renal Failure is a condition where the kidney organs are no longer able to transport the body's metabolic waste in the form of materials that are usually eliminated through urine and accumulate in body fluids due to impaired renal

excretion and cause endocrine and metabolic, fluid, electrolyte, and acid-base function disorders (Abdul, 2015). Meanwhile, according to Black (2014) Chronic Kidney Failure (CKD) is a progressive and irreversible impairment of kidney function, where the body is unable to maintain metabolism and fails to maintain fluid and electrolyte balance which results in an increase in ureum. In chronic renal failure patients have characteristics that are persistent, incurable and require treatment in the form of, kidney transplantation, peritoneal dialysis, haemodialysis and outpatient care for a long time (Desfrimadona, 2016).

The most common nursing problem found is excess fluid volume. In the patient Mrs H experienced excess fluid volume of 477 ml / kg. In the research of Khan et al (2016) which showed the results there were 312 patients with chronic renal failure disease and who experienced nursing problems of excess fluid volume there were 135 patients. Hypervolemia is an increase in intravascular, intertitial, or intracellular fluid volume (SDKI, PPNI: 2017). Hypervolemia is a fluid volume excess that occurs when the body retains water and sodium in the same proportion as normal extracellular fluid. Because water and sodium are retained in the body, the serum sodium concentration remains essentially normal (Kozier & Erb, 2010).

Hypervolemia occurs when the body retains fluid and electrolytes in the extracellular compartment in equal proportions. Due to isotonic fluid retention, the sodium concentration in the serum is still normal. Excess body fluid is almost always caused by an increase in the amount of sodium in the serum. Fluid overload occurs due to fluid overload/impaired homeostatic mechanisms in the fluid balance regulation process. In chronic renal failure about 90% of the nephron mass has been destroyed resulting in a decreased glomerular filtration rate (GFR). Decreased GFR causes sodium retention. The difference in osmotic pressure because sodium is retained causes the process of osmosis, namely water diffusing through the cell membrane so that osmotic balance is achieved. This causes extracellular fluid to increase until oedema occurs (Price & Wilson, 2006).

In Mrs H's patient, the laboratory results of creatinine and ureum were the main problem. Because the results obtained creatinine and ureum increased above normal with creatinine levels of 10.34 mg/dl and ureum of 240 mg/dl. Ureum and creatinine are chemical compounds that indicate normal kidney function, while creatinine is an endogenous metabolism that is useful for assessing glomerular function. Creatinine is produced in equal amounts and excreted through urine every day, with normal creatinine values for the onset of toxic ureum and is a detectable symptom compared to creatinine (Martini, 2010).

The ureum levels of patients with GGK before haemodialysis were still at abnormal levels, and on average were also hyperuremic. Serum ureum and creatinine levels need to be monitored as an indicator of kidney damage and this examination is carried out every time they undergo haemodialysis therapy, it is often seen that the serum ureum and creatinine levels of patients who will undergo haemodialysis therapy change, even exceeding normal levels (Runtung, Kadir, Semana, 2013).

Mrs H also had a decrease in haemoglobin to 7.0 g/dl. This resulted in clinical signs of anemic conjunctiva, dry mucous lips and tongue, chapped lips, CRT >3 seconds, moderate skin turgor >3 seconds. In some patients with CKD, anaemia often follows. Anaemia is a state of decreased haemoglobin levels in the blood. Anaemia can occur in 80-90% of patients with chronic renal failure, especially when it reaches stage III. Anaemia in chronic renal failure patients if haemoglobin is obtained (Haq et al, 2020; Cases et al, 2018). Anaemia is mainly caused by Erythropoietic Stimulating Factors (ESF) deficiency (Hidayat, Azmi, Pertiwi, 2016). The kidney is an organ that produces erythropoietin which functions as a regulator of erythrocyte production in the bone marrow. CKD patients will experience erythropoietin deficiency because kidney function is unable to produce erythropoietin in balance, as a result, there is a tendency for a linear relationship between haemoglobin levels and glomerular filtration rate in CKD patients. Other factors that can cause anaemia in CKD patients include shortened red blood cell lifespan, inflammation and infection, hypothyroidism, severe hyperparathyroidism, aluminium toxicity, haemoglobinopathies, and most commonly iron and folate deficiency (Thomas, Kanso, & Sedor, 2018). Anaemia that occurs in CKD patients can cause a decrease in the patient's quality of life. In addition, anaemia itself can significantly increase morbidity and mortality from CKD. The presence of anaemia in patients with CKD can be used as a risk predictor for cardiovascular events and the prognosis of kidney disease itself (Stauder & Theins, 2014).

Conclusion

Patients with chronic kidney disease often experience hypervolemia which is accompanied by an increase in laboratory results in the form of creatinine and ureum levels. then management is needed in improving patient hydration in the form of input and output as well as improving renal physiological anatomy through haemodialysis intervention in patients.

Refferences

1. Cases, A., Egocheaga, M. I., Tranche, S., Pallares, V., Ojeda, R., Gorriz, J. L., et al. (2018). Anemia of chronic kidney disease: Protocol of study, management and referral to Nephrology. Nefrologia, 38(1), 8-12.
2. Desfrimadona. (2016). Kualitas Hidup pada Pasien Gagal ginjal Kronik dengan Hemodialisa di RSUD Dr. M. Djamil Padang. Diploma Thesis Univesitas Andalas
3. Haq, M. T., Marbun, F., Zahrianis, A., Ulfa, M., Rambe, N. K., Kaban, K. B. (2020). Hubungan anemia dengan kualitas hidup pada pasien gagal ginjal kronik yang menjalani hemodialisis dibawah 6 bulan di rumah sakit khusus ginjal rasyida medan. Manuju, 2(3), 641-48.
4. Hidayat, R., Azmi, S., Pertiwi, D. (2016). Hubungan kejadian anemia dengan penyakit ginjal kronik pada pasien yang dirawat di bagian ilmu penyakit dalam rsup dr m djamil padang tahun 2010. JKA, 5(3), 546-50.
5. Martini. (2010). Hubungan Tingkat Asupan Protein dengan Kadar Ureum dan Kreatinin Darah Pada Penderita Gagal Ginjal Kronik di RSUD Dr. Moewardi Surakarta. Surakarta: Fakultas Ilmu Kesehatan Universitas Muhammadiyah Surakarta.
6. Nurarif & Kusuma. (2013). Aplikasi Asuhan Keperawatan Berdasarkan Diagnosa Dan NANDA NIC-NOC Jilid 2 Medaction
7. Pernefri. (2011). Konsesus manajemen anemia pada penyakit ginjal kronik. Jakarta: Perhimpunan Nefrologi Indonesia.
8. PPNI. (2017). Standar Diagnosis Keperawatan Indonesia: Definisi dan Indikator Diagnostik; Edisi I Jakarta: DPP PPNI
9. PPNI. (2018). Standar Intervensi Keperawatan Indonesia: Definisi dan Tindakan Keperawatan, Edisi I. Jakarta: DPP PPNI
10. PPNI. (2019). Standar Luaran Keperawatan Indonesia: Definisi dan Kriteria Hasil Keperawatan, Edisi I. Jakarta: DPP PPNI
11. Runtung, R., A. Kadir, Semana, A. (2013). Pengaruh Hemodialisa Terhadap Kadar Ureum, Kreatinin dan Hemoglobin pada Pasien GGK di Ruangan Hemodialisa RSUP Dr.Wahidin Sudirohusodo Makasar, Volume 2 Makasar : Stikes Nani Hasanudin Makasar dan Politeknik Kesehatan Kemenkes Makasar.
12. Thomas, R., Kanso, A., Sedor, J. R. (2018). Chronic Kidney Disease and Its Complications. Prim Care, 35(2), 329-44.Stauder, R., & Thein, S. L. (2014). Anemia in the elderly: clinical implications and new therapeutic concepts. Haematologica, 99(7), 1127-30.