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CARE BUNDLES FOR CHRONIC KIDNEY DISEASE (CKD) PATIENTS WITH HYPERVOLEMIA: CASE REPORTS

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Abstract

The rising prevalence of Chronic Kidney Disease (CKD) highlights its significance as a global health concern requiring comprehensive management. CKD is characterized by a progressive, irreversible decline in renal function, leading to fluid and electrolyte imbalances. One such complication is hypevolemia, which can result in serious health consequences. Our case reports evaluates the effectiveness of implementing care bundles that incorporated both independent and collaborative nursing intervention. Data collection was conducted through observation, interviews, physical examinations, and supporting data. The subjects were two stage V CKD patients with hypervolemia at Umar Wirahadikusumah Hospital in Sumedang, West Java. Over a five-day period, interventions included patient education, fluid restriction, proper positioning, breathing relaxation techniques, and collaborative treatments such as administration of diuretics, antihypertensives, hemodialysis, and ascitic fluid paracentesis.The implementation of care bundles resulted in improved clinical outcomes, including stabilized blood pressure (120–130/70–80 mmHg), decreasing abdominal circumference (6–15%), reducing dyspnea (respiratory rate 20–25 breaths/min), and increasing oxygen saturation (98–99%). Nurses play a key role as caregivers and coordinators in delivering both independent and collaborative interventions. Through an interdiciplinary approach, the implementation of care bundles has proven effective in achieving optimal care goals and improving patient health outcomes.

Background

Chronic Kidney Disease (CKD) is a secondary clinical syndrome that results from a prolonged decline in kidney function or structural damage, characterized by its irreversible nature (Ammirati, 2020). According to Kusuma (2022), the risk factors for CKD are associated with various pathological conditions, including type 2 diabetes mellitus (30-50%), type 1 diabetes mellitus (3,9%), hypertension (27,2%), primary glomerulonephritis (8,2%), and chronic tubulointerstitial nephritis (3,6%). CKD has become a significant public health concern globally, with its prevalence increasing year by year. According to data from the Basic Health Research (2018), the number of individuals in Indonesia aged over 15 years diagnosed with CKD reached 713.783, with the highest number reported in West Java Province, accounting for 131.846 cases. On average, CKD affects approximately 3,8 individuals per 1.000 population, with 60% of these patients having undergone hemodialysis (Ministry of Health, RI, 2023).

According to the National Kidney Foundation and Kidney Disease Improving Global Outcome (KDIGO), the classification CKD is based on the estimated Glomerular Filtration Rate (eGFR) and the level of albuminuria. CKD is categorized into six stages, starting with stages 1–2, which are defined by an eGFR value of $\leq$ 60 mL/min with a decrease in kidney function that lasts for 3 months. In stages 3a and 3b, the eGFR declines to approximately 45–59 mL/min. More severe

reductions in eGFR are observed in stages 4–5, with eGFR decreasing to 15–29 mL/min and < 15 mL/min, which signifies advanced stages of chronic kidney disease (Evans et al., 2022).

The main clinical manifestations of CKD is fluid overload or hypervolemia. This condition occurs due to kidney damage that impairs the body's ability to excrete fluid. Physical examination findings in CKD patients often reveal pitting edema in the extremities, capillary refill time (CRT) greater than 2 seconds, and abdominal distension or ascites (Safitri & Sani, 2019). Ascites is commonly observed in patients with advanced-stage. This is due to the flexible nature of the abdominal cavity, which allows it to expand and facilitates the accumulation of fluid within the peritoneal space (Mehrotra et al., 2016). One of the contributing factors to fluid overload in patients with CKD is hypoalbuminemia. When albumin is excreted through the urine, plasma oncotic pressure decreases, allowing fluid to leak from the blood vessels into the abdominal cavity and other areas such as the extremities (Yusman et al., 2020). Another factor is where the kidneys are unable to effectively excrete sodium and water, resulting in increased hydrostatic pressure. Consequently, intracellular fluid may leak into the interstitial tissues, leading to fluid accumulation in the abdomen and extremities (Sari et al., 2016).

Fluid accumulation in the abdominal cavity, can lead to shortness of breath as the fluid exerts pressure on the diaphragm. This pressure restricts the movement of respiratory muscles, thereby impairing breathing and causing respiratory discomfort. In addition, ascites may produce a sensation of abdominal fullness, reduced appetite, and increase the risk of malnutrition (Yusman et al., 2020). Fluid overload in the peritoneal cavity may also predispose patients to infections such as Spontaneous Bacterial Peritonitis (SBP), which can progress to sepsis. Other potential complications of hypervolemia in CKD patients include electrolyte imbalances, severe edema, impaired mobility, and reduced quality of life (Al-Zakhari et al., 2020).

Managing hypervolemia in CKD patients should be a primary focus to prevent the development of more serious complications. According to the KDIGO guidelines (2020) and the Indonesian Ministry of Health (2023), the management of hypervolemia can be approached through non-pharmacological strategies such as fluid restriction, sodium restriction, and health education. Pharmacological management includes the administration of antihypertensive agents and diuretics. Additional treatments may involve hemodialysis and ascitic paracentesis. The Institute for Healthcare Improvement (2020) emphasizes that managing hypervolemia in CKD requires a comprehensive and coordinated multidisciplinary approach. One such approach is the implementation of care bundles, which consist of a set of evidence-based interventions consistently applied to address specific clinical conditions. The implementation of care bundles requires collaborative efforts from various healthcare professionals, including doctor, nurses, pharmacists, and others to improve the overall health outcomes of patients (Shi et al., 2018).

The implementation of care bundles, nurses play a role in delivering patient care through both independent and collaborative interventions. Independent interventions may include providing health education, fluid restriction, proper patient positioning, breathing relaxation techniques, monitoring fluid balance, vital signs, clinical symptoms, and evaluating the patient’s response to ongoing therapies. Collaborative interventions may involve the administration of medications such as antihypertensive agents, diuretics, hemodialysis, and ascitic paracentesis. Based on this background, the authors aim to present this case report to implement and evaluate the effectiveness of care bundle interventions both independent and collaborative nursing in improving the health status of CKD patients with hypervolemia.

Methods

The method used in this study is descriptive, presented in the form of case reports with a nursing care approach that follows five processes: assessment, diagnosis, planning, implementation, and evaluation. The subjects of these case reports are two patients with Stage V CKD experiencing hypervolemia, who were hospitalized at Umar Wirahadikusumah Hospital, Sumedang, West Java. Data collection was conducted through both primary and secondary sources, including observation, interviews, physical examinations, and supporting data. Data collection and evaluation commenced on the day of hospital asmiddion. Subsequently, care bundle interventions and corresponding assessments were implemented over a five-day period for each patient. By the sixth day, both individuals had been discharged from the hospital. Informed consent was obtained from the patients and their families following a clear explanation of the study procedures. Ethical considerations were rigorously observed by employing only patient initials to ensure anonymity and by safeguarding all personal information throughout the preparation of these case reports.

Case Description Patient 1

Mrs. C, a 29 year old, female, was assessed on December 3, 2024, presenting with complaints of shortness of breath, abdominal distension, swelling, and tingling sensations in both upper and lower extremities. The shortness of breath had persisted for five days prior to hospital admission. The patient had a history of CKD since 2023, and a diagnosis of autoimmune disease in 2022, for which she had not undergone consistent treatment. There was no known family history of hypertension, diabetes mellitus, or autoimmune diseases. The patient was alert and oriented, with a Glasgow Coma Scale (GCS) score of E4V5M6. Vital signs at admission were: blood pressure 130/80 mmHg, heart rate 89 beats/min, respiratory rate 30 breaths/min, oxygen saturation (SpO_2) 99% on a non-rebreathing mask (NRM) at 15 liters per minute (LPM), and body temperature of 36.4°C. The patient's height was 155 cm, and her weight had increased from 45 kg to 50 kg over the past three months.

Physical examination revealed abnormal findings, including anemic conjunctivae, use of accessory respiratory muscles with a regular rhythm, tachypnea, ascites with an abdominal circumference of 121 cm, positive shifting dullness, peripheral edema, dry skin, and cold extremities. Laboratory results on December 3, 2024, showed hemoglobin level at 7.5 g/dL, blood urea nitrogen (BUN) at 104 mg/dL, and serum creatinine at 8.7 mg/dL. A chest X-ray indicated right-sided pleural effusion with comprehensive atelectasis of the right lung, while an abdominal ultrasound revealed massive ascites. The patient was placed on a strict fluid restriction of a maximum of 1 liter/day. At the time of assessment, she had an indwelling catheter with urine output recorded at only 100 mL over 11 hours (from 09:00 to 20:00). Ongoing pharmacological therapy included furosemide, omeprazole, amlodipine, folic acid, and sodium bicarbonate (bicnat).

Case Description Patient 2

Mr. E, a 49 year old, male, was assessed on December 9, 2024, presenting with complaints of shortness of breath, abdominal distension, and swelling in the genital area. He had been experiencing difficulty breathing for five days before admission. His medical history included diabetes mellitus, diagnosed in 2021, and there was a family history of the same condition in his mother and grandmother. On assessment, Mr. E was concious and fully oriented, with a GCS score of E4V5M6. His vital signs were as follows: blood pressure 140/80 mmHg, heart rate 85 beats/min, respiratory rate 28 breaths/min, oxygen saturation (SpO_2) 99% with a nasal

cannula (NC) at 3 LPM, and body temperature of 36.6°C. The patient had gained weight from 75 kg to 85 kg over the past six months.

The physical examination identified several abnormalities: anemic conjunctivae, mildly icteric sclerae, use of accessory respiratory muscles with regular breathing rhythm, tachypnea, ascites with an abdominal circumference of 120 cm, edema at extremities, and swelling in the genital area. Laboratory results on December 9, 2024, showed a hemoglobin level of 8.0 g/dL, serum albumin 3.32 g/dL, BUN 96 mg/dL, serum creatinine 7.34 mg/dL, and HbA1c 6.4%. The patient was on a fluid restriction of 600 mL/day; however, at the time of assessment, he had already consumed approximately 1800 mL. The patient did not have a urinary catheter in place and urine output was recorded at 500 mL over a six-hour (from 14:00 to 20:00). Current medications included amlodipine, sodium bicarbonate (bicnat), and furosemide.

Diagnoses and Nursing Intervention

Based on the assessment findings, both patients were found to have pitting edema in the extremities, ascites, positive shifting dullness, weight gain, and shortness of breath, leading to the identification of the nursing diagnosis of D.0022 - *Hypervolemia*, related to impaired renal regulatory mechanisms. The interventions implemented included I.03114 - *Fluid Volume Management*, which consisted of fluid restriction, health education, collaboration in administering diuretics and antihypertensive medications, as well as other therapies such as hemodialysis and ascitic fluid drainage. Observations focused on monitoring blood pressure, edema, fluid intake and output, fluid balance, and abdominal circumference.

Additionally, both patients reported shortness of breath due to ascites, along with increased respiratory rate, use of accessory respiratory muscles, and tachypnea. These symptoms supported the nursing diagnosis of D.0005 - *Ineffective Breathing Pattern*, related to impaired respiratory effort. Interventions provided included I.01011 - *Airway Management* and I.01014 - *Respiratory Monitoring*, which comprised positioning the patient in fowler or semi-fowler position, oxygen therapy, breathing relaxation techniques, and monitoring complaints of dyspnea, breathing effort, respiratory rhythm, respiratory rate, and oxygen saturation (SpO_2).

The short-term goals of the care provided were to control the signs and symptoms of CKD by reducing fluid overload and alleviating dyspnea. Another goal was to increase the patient's and family's understanding of the disease and its management. The long-term goals were to enable patients to maintain fluid balance through improved knowledge of fluid intake restriction and management strategies, thereby minimizing fluid accumulation in the extremities and abdominal. Additionally, patients were expected to maintain an effective breathing pattern independently by applying the non-pharmacological techniques taught during care. The achievement of these goals is expected to improve the patient's quality of life, as evidenced by the ability to perform light activities without experiencing physical discomfort related to abdominal distension or respiratory difficulty.

Results of Care Bundles Implementation

The implementation of care bundles, consisting of both independent and collaborative nursing interventions including fluid volume management, airway management, and respiratory monitoring was carried out over a period of five days for both patients during hospitalization. The following table presents the results of fluid balance monitoring for both patients:

Table 1. Monitoring Fluid Balance

	Indicator	Day 1	Day 2	Day 3	Day 4	Day 5
Patient 1	Drinking water	1000	500	600	300	600
	IV fluid	-	-	-	-	-
	Therapy/Medication	22	22	22	22	22
	Fluid Intake	**1022**	**522**	**622**	**322**	**622**
	Estimate IWL	500	500	500	500	500
	Urine	100	150	150	250	100
	Ascitic Paracentesis	-	3000	-	-	-
	Fluid Output	**600**	**3650**	**650**	**750**	**600**
	Fluid Balance	**(+) 422**	**(-) 3128**	**(-) 28**	**(-) 428**	**(+) 22**
Patient 2	Drinking water	1800	500	750	600	600
	IV fluid	200	200	200	-	-
	Therapy/Medication	12	12	12	12	12
	Fluid Intake	**2012**	**712**	**962**	**612**	**612**
	Estimate IWL	850	850	850	850	850
	Urine	500	300	200	250	200
	Ascitic Paracentesis	-	-	-	1000	-
	Fluid Output	**1350**	**1150**	**1050**	**2100**	**1050**
	Fluid Balance	**(+) 662**	**(-) 438**	**(-) 88**	**(-) 1488**	**(-) 438**

The patients' fluid intake comprised oral water consumption, intravenous fluids, and medications or therapies delivered via intravenous injection. Fluid intake from food was not quantified in either case, and neither patient experienced vomiting or diarrhea. Consequently, fluid output was defined as the sum of estimated insensible water loss (IWL) through perspiration, urinary excretion, and the volume of fluid removed during ascitic paracentesis. Fluid output monitoring was conducted every 24 hours, with urine output recorded at 20:00 each day. Based on table 1 above, both patients demonstrated a positive fluid balance on day 1, as fluid restriction had not yet been initiated upon hospital admission, and fluid intake still exceeded the recommended limits. At this point, the patients and their families had not yet understood the purpose and benefits of fluid restriction. Therefore, on day 1, both patients and their families received health education regarding the importance and benefits of fluid restriction in reducing edema and fluid overload. Following the educational intervention, from day 2 to day 5, both patients began to apply fluid restriction with an intake ranging from approximately 300 to 750 mL/day. The target of this restriction was to achieve a negative fluid balance, which would help in reducing the excess fluid accumulated in the body.

The implementation of care bundles through independent and collaborative nursing interventions resulted in observable changes in blood pressure (BP), respiratory rate (RR), oxygen saturation (SpO_2), fluid balance (FB), and abdominal circumference (AC). The outcomes of care bundle implementation for both patients are presented in the following table:

Table 2. Monitoring Therapy, Vital Sign, Fluid Balance, and Abdominal Circumference

Patient	Days	Implementation and Therapy	BP	RR	SpO2	FB	AC
1	1	Health education, amlodipine, furosemide, post hemodialysis, positioning, oxygen therapy NRM 15 LPM	130/80	30	99%	Positif 422	121 cm
	2	Fluid restriction, amlodipine, furosemide, ascitic pracentesis, positioning, oxygen therapy NRM 15 LPM	150/90	30	98%	Negatif 3128	107 cm
	3	Fluid restriction, amlodipine, furosemide, positioning, oxygen therapy NRM 15 LPM	140/90	28	99%	Negatif 28	106 cm
	4	Fluid restriction, amlodipine, furosemide, post hemodialysis, positioning, oxygen therapy NRM 15 LPM	130/90	26	99%	Negatif 428	103 cm
	5	Fluid restriction, amlodipine, furosemide, positioning, oxygen therapy NRM 15 LPM	120/80	25	99%	Positif 22	103 cm
2	1	Health education, amlodipine, furosemide, positioning, oxygen therapy NC 3 LPM	140/80	28	99%	Positif 662	120 cm
	2	Fluid restriction, amlodipine, furosemide, post hemodialysis, positioning, oxygen therapy NC 3 LPM	140/90	22	99%	Negatif 438	117 cm
	3	Fluid restriction, amlodipine, furosemide, positioning, oxygen therapy NC 3 LPM	140/85	24	99%	Negatif 88	118 cm
	4	Fluid restriction, amlodipine, furosemide, ascitic paracentesis, positioning, oxygen therapy NC 3 LPM	170/75	23	98%	Negatif 1488	114 cm
	5	Fluid restriction, amlodipine, furosemide, ascitic paracentesis, post hemodialysis, positioning	130/70	20	99%	Negatif 438	112 cm

The interventions provided were tailored to each patient's condition and response. Based on table 2 above, independent nursing interventions delivered to both patients included fluid restriction, positioning, and breathing relaxation techniques. Among these, fluid restriction was the primary intervention used to manage fluid overload. After receiving health education on day 1, both patients began to implement fluid restriction. As a result, from day 2 to day 5, patients achieved a negative fluid balance, indicating that the amount of fluid excreted through urine or therapeutic procedures exceeded intake. This increase in fluid output led to a reduction in abdominal circumference by approximately 1–2 cm per day.

Regarding respiratory problems, independent nursing interventions were provided by positioning patients in the semi-fowler position and regularly teaching breathing relaxation

techniques. Patient 2 was able to consistently maintain the semi-fowler position and practice breathing relaxation techniques effectively. However, patient 1 occasionally changed to the fowler position due to worsening dyspnea, finding that this position provided more comfort and relief. The implementation of these positioning interventions led to a reduction in dyspnea symptoms from day 3 to day 5.

Collaborative nursing interventions for fluid overload included administering medications such as antihypertensives and diuretics. Both patients were prescribed amlodipine to help control blood pressure. On day 5, blood pressure improved to 120/80 mmHg in patient 1 and 130/70 mmHg in patient 2. Both patients also received furosemide as a diuretic to increased fluid output and a decrease in abdominal circumference, with both patients showing reductions of approximately 1–2 cm. Another collaborative intervention was hemodialysis, which supported the removal of metabolic waste and excess fluid. After hemodialysis sessions, both patients experienced reductions in abdominal circumference ranging from 2–3 cm.

Additionally, ascitic paracentesis was performed to remove fluid accumulated in the abdominal cavity. Based on table 2, patient 1 underwent paracentesis on day 2, which lasted approximately 15 minutes and resulted in the removal of 3.000 mL of fluid. This led to a 14 cm reduction in abdominal circumference, from 121 cm to 107 cm. Patient 2 underwent paracentesis on day 4, with 1.000 mL of fluid removed and a 4 cm decrease in abdominal circumference, from 118 cm to 114 cm. However, due to the limited volume removed, a second paracentesis was attempted on day 5. No fluid was extracted during this attempt, and no further reduction in abdominal circumference was noted. Given the low effectiveness of paracentesis in patient 2, routine hemodialysis three times per week was recommended to support ongoing fluid removal.

Collaborative interventions for respiratory problems included oxygen therapy, with doses adjusted according to each patient's condition. Patient 1 received oxygen via NRM at 15 LPM. After monitoring revealed no deterioration in oxygen saturation or respiratory rate, the dose was reduced to 10 LPM on day 3. Patient 2 was administered oxygen via NC at 3 LPM, which was discontinued on the final day after stable respiratory rate and oxygen saturation levels were achieved. Both patients experienced improvements in respiratory rate (reduced by 5–8 breaths/min) and normal oxygen saturation between 98–99%.

Discussion

The care bundles through independent and collaborative nursing interventions had shown significant impacts on the health status of CKD patients with hypervolemia. A study by Jha et al. (2016) revealed that multidisciplinary interventions involving doctor, nurses, and dietitians were more effective in improving the health status of CKD patients compared to standard care. This approach positively influenced medication adherence, dietary compliance, and healthy lifestyle practices. Therefore, the implementation of care bundles is highly recommended in the treatment of CKD patients. Independent nursing interventions within care bundles include health education, fluid restriction, positioning, and teaching breathing relaxation techniques. Fluid restriction aims to align fluid intake with the kidney's reduced ability to regulate fluid and electrolyte balance (Angraini & Putri, 2016).

However, many CKD patients are often reluctant to follow fluid restrictions due to persistent thirst and a lack of understanding of the consequences of non-compliance. Excessive fluid intake beyond recommended limits can result in weight gain, peripheral edema, periorbital swelling, pulmonary edema, and dyspnea (Sari et al., 2023). These conditions arise due to impaired renal function, which hinders the elimination of metabolic waste through urine.

Nurses, in their role as educators, are responsible for providing health education about the importance of fluid restriction to improve patient adherence. This education should involve both patients and their families, as family support plays a vital role in enhancing patient compliance. Research by Siskawati & Simanullang (2022) found that health education significantly improved adherence to fluid restriction (p-value < 0.001). Education serves as a source of information for patients and families about CKD and the benefits of fluid restriction, helping patients make informed decisions. Family involvement also boosts patient motivation and adherence to treatment regimens (Saraswati et al., 2019).

In addition to education and fluid restriction, independent nursing interventions such as positioning are essential in relieving dyspnea in CKD patients. Positioning strategies such as semi-fowler (45°) and fowler (90°) are recommended. According to Putranto et al. (2021), these positions improve oxygen saturation and reduce respiratory rate by enhancing diaphragmatic movement, allowing better lung expansion and oxygen exchange. Both positions effectively alleviate dyspnea, with no significant difference in outcomes (Muhsinin et al., 2022).

Pharmacological management also plays a crucial role, particularly in blood pressure control, which is key to slowing disease progression and preventing cardiovascular complications. The target blood pressure for pre-dialysis CKD patients is <120 mmHg, and <130 mmHg for post-transplant patients (KDIGO, 2020). Nurses can collaborate in administering antihypertensive such as amlodipine, a calcium channel blocker that lowers blood pressure by dilating peripheral vessels without reducing GFR, making it safe for CKD patients (Tay et al., 2021).

To manage fluid overload, diuretic therapy is a key collaborative intervention. Loop diuretics, particularly furosemide, are commonly used in CKD patients (Anindita, 2024). Furosemide has been shown to effectively increase urine output in 77.3% of study particip ants with CKD undergoing hemodialysis (Alamsyah et al., 2018). These participants were aged 30–74, had a GFR <40 mL/min (stage 3 to stage 5 CKD), and received continuous IV furosemide therapy. For optimal effect, furosemide therapy should be combined with fluid restriction. Furosemide inhibits sodium and water reabsorption in the loop of Henle, increasing urine output (Khan et al., 2016). Fluid restriction prevents fluid re-accumulation, enhancing the effectiveness of the diuretic. Together, these interventions promote stable and regulated fluid balance in CKD patients (Huxel et al., 2023).

Another key collaborative intervention is hemodialysis, which effectively reduces fluid overload. Haksara and Rahmanti (2021) found that regular hemodialysis significantly decreased fluid volume and abdominal circumference in CKD patients. The Kidney Disease Outcomes Quality Initiative (KDOQI, 2020) recommends a minimum of 10 hours of hemodialysis per week, typically spread over three sessions per week. Consistent adherence to this schedule supports effective fluid removal.

For patients with ascites, ascitic paracentesis is an invasive procedure used to drain excess fluid from the abdominal cavity. Prasetya et al. (2019) reported that paracentesis effectively reduces intra-abdominal pressure and abdominal girth, with average reductions ranging from 5 to 15 cm, depending on the volume of fluid removed. These reductions help alleviate symptoms such as dyspnea, abdominal discomfort, and limited mobility. Paracentesis not only alleviates clinical symptoms but also contributes to weight loss (Lestari & Widyaningsih, 2021). However, in some cases, fluid removal may be minimal or unsuccessful due to factors such as limited fluid volume, uneven fluid distribution, peritoneal adhesions or fibrosis, procedural errors, or underlying conditions like hypoalbuminemia (Barakat & Zaidi, 2023).

Following the administration of various nursing interventions, patient monitoring is crucial. Nurses should continuously assess fluid balance, clinical symptoms, and vital signs to evaluate the effectiveness of care bundles. Monitoring should include accurate documentation of fluid intake and output to assess fluid status (Think Kidneys, 2020). If there is no improvement in fluid overload, further independent or collaborative interventions may be needed (Rahman et al., 2021). Throughout the multidisciplinary care bundle approach, physicians and clinical laboratory staff also play essential roles. Physicians determine necessary laboratory tests and frequencies, while laboratory personnel conduct tests and report results to the clinical team (Maset et al., 2022). This interprofessional collaboration facilitates early detection of clinical changes and ensures prompt intervention in CKD patients.

Such collaboration between professionals is interdependent and mutually reinforcing in improving patient outcomes. No single intervention stands alone; for instance, pharmacological therapies should be supported by nursing interventions like health education. Likewise, fluid restriction enhances the effectiveness of diuretics, hemodialysis, and paracentesis in managing fluid overload and reducing abdominal circumference. Therefore, care bundles represent a comprehensive approach in providing holistic care to patients.

Limitation

In this case report, daily laboratory data particularly related to electrolyte levels were not available. This limitation may result in a lack of detailed information regarding the dynamic fluctuations in fluid and electrolyte status, which can potentially occur each day due to the administration of diuretic therapy, hemodialysis, and ascitic paracentesis.

Conclusion

The various interventions provided to patients require multidisciplinary collaboration, as no single intervention can stand alone and each is interconnected. The implementation of care bundles by multidisciplinary teams has been proven effective in achieving optimal clinical outcomes by improving patients' health status. The care bundle approach, involving both independent and collaborative nursing interventions, contributed to improvements in clinical status as evidenced by changes in blood pressure (120–130/70–80 mmHg), reduction in abdominal circumference (6–15%), respiratory rate (20–25 breaths/min), and an increase in oxygen saturation (98–99%).

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