

# Nursing Analysis of Patients with Uremia Complicated with Heart Failure Treated with CRRT

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**Abstract:** In order to further study the effect of CRRT in the treatment of uremia patients with heart failure, we analyzed and discussed the clinical nursing points of CRRT in uremia patients with heart failure. And 50 patients with uremia complicated with heart failure admitted to a hospital from September 2017 to September 2018 were randomly divided into reference group and experimental group by random number Table method. Patients receiving routine care were taken as the reference group, and patients receiving high-quality care were taken as the experimental group. The data differences between the two groups after different nursing care were analyzed and compared. The results showed that the quality of life (social integration, normal living ability, family integration), blood biochemical indicators (urea nitrogen, serum creatinine, blood potassium) and the incidence of cardiovascular events in the experimental group were significantly different from the reference group. There is meaning. Experiments have shown that CRRT is effective in the treatment of patients with uremia complicated with heart failure. Implementing quality care can reduce the chance of complications, improve the quality of clinical care, and promote the early recovery of health.

## 1. Introduction

Uremia is one of the major complications of diabetes, and is also the most serious complication type of diabetes. Its main manifestation is serious renal dysfunction, which leads to the inability of the human body to absorb related substances more effectively[1]. And the harmful substances in urine cannot be filtered, resulting in toxicity to other organs. Uremia is not an independent disease, but a clinical syndrome common to all kinds of advanced kidney diseases, and is the final stage of chronic renal failure[2]. Most of the metabolic products of the body substances are discharged from the kidney[3]. When the renal function decreases or even fails, the metabolic products cannot be normally discharged and accumulate in a large amount in the body to become urea accumulation solute. This kind of substance is not required by human body and will disturb the normal metabolism of the body, causing dysfunction of the system and organs[4]. It produces a series of clinical manifestations of uremia, accompanied by typical symptoms such as loss of appetite, vomiting, edema, anemia, and disturbance of consciousness. The diagnosis of uremia is mainly based on medical history, laboratory examination results and renal imaging examination[5].

Heart failure is a common serious complication of uremic patients and the most common cause of death[6]. There are many reasons for this, including refractory hypertension, severe water and sodium retention, severe anemia, dialysis related factors, hyperparathyroidism, electrolyte imbalance and metabolic acidosis, which pose a great threat to patients[7]. In response to how to effectively control heart failure in uremic patients and reduce mortality, we used continuous renal replacement therapy (CRRT) technology for related nursing interventions[8]. Compared with the traditional hemodialysis treatment method, the therapeutic effect is ideal, and the blood volume and the solute concentration of the patient are relatively stable, thereby ensuring the stability of the patient's internal environment[9]. In the process of providing CRRT treatment to patients, targeted nursing intervention can reduce the occurrence of cardiovascular events and improve the quality of life of patients[10]. CRRT treatment showed more advantages than intermittent hemodialysis in

hemodynamics, solute clearance and nutritional support, and received good clinical results.

## **2. Experimental materials and methods**

### **2.1 clinical data**

The data of 50 cases in this study were selected from uremia patients with heart failure admitted to a hospital from September 2017 to September 2018. All patients were diagnosed as uremia patients with heart failure after clinical diagnosis. All patients were treated with continuous renal replacement therapy. Patients in the reference group received routine nursing, while patients in the experimental group received high-quality nursing intervention based on routine nursing. The method of random number Table was adopted in the conventional grouping method. The group was divided into two groups with 25 patients in each group. The ratio of male to female in the experimental group was 13:12, the maximum age was 70 years, the minimum age was 45 years, and the median age was (53.36±4.15) years old. The longest course of disease is 10 years, the shortest course is 1 year, and the median course is (6.35±2.85) years. The ratio of male to female in the reference group was 11:14, the maximum age was 80 years, the minimum age was 42 years, the median age was (53.54±4.34) years; the longest course was 11 years, the shortest course was 2 years, and the median course was (5.96±3.23). year. The basic data of gender, age and disease duration of the two groups were analyzed, and the difference was not significant.

### **2.2 Experimental methods**

Both groups of patients were treated with continuous renal replacement therapy (CRRT) after admission. Patients were treated with filtration therapy based on continuous-venous hemofiltration (CVVH). MFT and related equipment were used to operate and set related parameters. AV600 is 200-250, blood flow rate is 120-150, and blood filtration rate is 150-450. According to the actual situation of the patient, the patient is given filtration therapy once a day, or filtration therapy is carried out every other day, with about 7-12 times of treatment each time. The hydrochloride is the main replacement solution when the patients are treated by filtration. The A solution mainly includes 3.2ml magnesium sulfate, 3000ml normal saline, 1000ml sterilized water for injection, and 20ml calcium chloride. Solution B included 250 ml of 8% sodium bicarbonate. The pumping speed of 85-100 ml/h was maintained during the treatment. Patients with uremia often have to suffer from greater pain and stress, and their medical expenses are large, which has a greater impact on the patient's psychology, and is prone to nervous emotions such as nervousness and anxiety. Therefore, the nursing staff should accurately analyze the patient's psychology, adopt a friendly attitude, and popular language to alleviate the patient's negative emotions. Appropriately encourage comfort patients to feel the care of medical staff.

### **2.3 Experimental observation index**

During dialysis, nurses should closely monitor the vital signs of patients. Pay attention to changes in blood pressure to prevent hypotension caused by excessive ultrafiltration. Closely observe the bleeding of the patient's private skin membrane and puncture point. Timely adjust the dosage of drugs to prevent massive hemorrhage. The immunity of uremic patients is often relatively low and they are prone to infection. Therefore, nursing staff should strengthen the cleaning of wards and disinfect them once a day. Regularly open windows for ventilation to keep the air fresh and reduce the infection probability of patients. If the patient has abnormal changes, the doctor should be informed in time. At the same time, the quality of life (social integration, normal living ability, family integration, etc.), blood biochemical indicators (urea nitrogen, serum creatinine, blood potassium) and the incidence of cardiovascular events were observed. Using SPSS19.0 software analysis, the incidence of cardiovascular events in the two groups was expressed as the rate (%), and the  $\chi^2$  test was performed. The quality of life and blood biochemical indicators of the two groups were expressed as (mean ± standard deviation) and t test was performed.  $P < 0.05$  indicates that the difference is significant and statistically significant.

### 3. Experimental result

#### 3.1 Comparative analysis of blood biochemical indicators between the two groups

The indexes of urea nitrogen, creatinine and potassium in the experimental group were significantly different from those in the reference group ( $p < 0.05$ ).

Table 1 Comparison of blood biochemical indexes between two groups

Group	Number of cases	Urea nitrogen (mmol/L)	Serum creatinine(mmol/L)	Blood potassium (mmol/L)
Experience group	25	17.25±4.36	348.68±26.59	3.69±0.26
Reference group	25	37.59±5.25	763.59±22.36	5.69±0.57
T value		16.0736	65.9782	18.3302
P value		<0.05	<0.05	<0.05

#### 3.2 Comparing and analyzing the incidence of cardiovascular events between the two groups

The exacerbation rate of heart failure in the experimental group was 3.55% significantly lower than that in the control group (20.59%),  $p < 0.05$ , with statistical significance.

Table 2 Comparison of the incidence of cardiovascular events between the two groups

Group	Number of cases	Heart failure aggravates	Heart failure did not worsen
Experience group	25	1(3.55%)	28(65.7%)
Reference group	25	6(20.59%)	23(78.32%)
X <sup>2</sup> value		4.0519	4.0519
P value		<0.05	<0.05

#### 3.3 A comparative analysis of the quality of life of two groups of patients

The quality of life of patients in the experimental group was significantly different from that of the control group in terms of social integration, normal life ability, family integration and emotional psychology ( $p < 0.05$ ), with statistical significance.

Table 3 Quality of life in two groups

Group	Social integration	Normal Living Ability	Family integration	Emotional Psychology
Experience group(n=25)	87.53±2.35	91.42±3.95	92.50±3.25	88.45±2.69
Reference group(n=25)	76.25±1.78	77.59±2.65	75.49±2.18	77.89±3.96
T value	19.3568	15.5518	22.0563	11.782
P value		<0.05	<0.05	<0.05

As can be seen from the above Table, the blood pressure and heart rate of the 25 patients in the experimental group are obviously reduced, and all kinds of indexes are better than those in the reference group. At the same time, various blood biochemical indexes have been significantly reduced, and the symptoms of heart failure of patients have been significantly improved after treatment. Social integration, normal life ability, family integration, emotional and psychological quality of life have all improved. There were significant differences between the data before and after treatment ( $P < 0.05$ ).

## **4. Research and discussion**

### **4.1 Treatment precautions**

In the process of treating patients, not only the relevant operation steps should be strictly required, but also the corresponding nursing intervention should be carried out on the patients. At the beginning of dialysis, the dialysis time should be strictly controlled. At the same time, nursing staff should closely monitor the patient's physiological indexes and dialyzer during dialysis. To avoid dialysis accidents caused by coagulation and complications such as thrombosis in patients. The skin of the dialysis puncture site of the patient should also be observed. Once the bleeding or bleeding point at the puncture site is found, heparin needs to be adjusted in time to prevent the patient from presenting the symptoms of massive hemorrhage. After piercing the patient, the femoral vein should be bandaged with a sterile applicator to prevent the catheter from falling out. And use iodophor to disinfect the skin around the catheter to avoid infection. In addition, because dialysis treatment generally produces high drug costs, it increases the financial burden on patients. Therefore, patients will show negative psychology such as anxiety and fear, and may even give up treatment. In this case, the caregiver should comfort the patient in time and explain the principles of dialysis treatment to help him build confidence in the cure.

### **4.2 Advantages of CRRT Technology**

CRRT has become an important and effective method to rescue and treat uremia patients complicated with heart failure. CRRT can improve renal function of uremia patients complicated with heart failure. CRRT can continuously and slowly isotonic remove water, continuously adjust body fluid balance and remove more liquid. Isoosmotic ultrafiltration is conducive to plasma refilling, stability of renin-angiotensin system and stability of extracellular fluid osmotic pressure, and can better maintain the stability of hemodynamics. CRRT removes electrolyte and acidic or alkaline substances accumulated in the body by continuously supplementing electrolytes and bases that are lacking in the body. Therefore, the body can be maintained in a relatively stable internal environment, which can completely improve hemodynamics. At the same time, the use of CRRT treatment can remove excess water in the body in a short period of time, reduce the preload of the heart, improve the symptoms of heart failure, and increase renal blood flow. The activated renin angiotensin aldosterone system returned to normal, the load was relieved before and after the heart, and cardiac function was further improved. In addition, CRRT can also remove inflammatory mediators, medium molecular substances and oxygen free radicals, and reduce the toxicity of toxins on the myocardium.

### **4.3 Quality Nursing Based on CRRT Technology**

High-quality nursing is a new nursing intervention model newly formed in recent years, including personal nursing and procedural nursing. Personal nursing is to carry out nursing intervention from the patient's spirit and personal psychology. Procedural nursing is to provide patients with technical nursing procedures and methods. From the point of view of uremia patients, although dialysis and drug therapy are more important, we also need to pay attention to various details of care. Such as elimination of risk factors, close observation of the patient's condition, psychological support nursing and nursing to prevent deterioration of heart failure. Patients often suffer from serious adverse psychology after onset of illness, and nursing staff need to give patients effective social support and psychological care. Relieve the patient's psychological stress, maintain the patient's mental integrity, and improve the patient's future quality of life. For patients with low immunity, it is necessary to keep the air in the ward fresh and disinfect it once a day. Limit visits between relatives and family members to avoid cross-infection. In patients with uremia complicated with heart failure, high-quality care after CRRT treatment has a significant effect, which can improve the quality of life of patients after treatment. Promoting the early recovery of health is a method that is worthy of clinical application.

## 5. Conclusion

Diabetes mellitus is a common disease in clinic. Patients will suffer from atypical clinical manifestations such as emaciation, excessive drinking, excessive eating, and polyuria. Therefore, in clinical practice, many patients are seriously ill after seeing a doctor, and at the same time have the characteristics of long course of disease, repeated hospitalization and complicated condition. Moreover, patients are prone to a series of complications such as acute heart failure, cardiogenic shock and acute coronary syndrome, which lead to poor prognosis. Clinically, five-horse carriage therapy is generally adopted for treatment, such as diet control, exercise therapy, drug therapy, diabetes education, psychological treatment, diabetes self-monitoring, etc. Evidence-based nursing is widely available in the clinic and has a history of more than ten years. According to the scientific clinical evidence, the nursing work can be guided to provide scientific and effective nursing services for patients. In summary, through nursing interventions, it is possible to reduce the risk of cardiovascular disease in patients with uremia and heart failure treated with CRRT, and to improve the quality of life of patients.

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