Research Progress on Capacity Management in Patients with Chronic Heart Failure

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Abstract: Chronic heart failure (CHF) is the ultimate destination of most cardiovascular diseases and the leading cause of death. It is estimated that about 260 million of the world's patients are suffering from the pain \cite{1}. Studies have shown that effective capacity management can reduce patient's capacity related symptoms and prevent disease progression, while nurses play an important role in capacity assessment. This paper expounds the current situation, evaluation and management strategies of capacity management in order to provide nursing basis for clinical nursing workers.

Current Situation and Influencing Factors of Capacity Management

Fluid retention is the first inducement in patients with decompensated heart failure (62.7\%) and deterioration of heart failure\cite{2}. The main reason for fluid retention is poor medication adherence and inability to strictly control the intake of fluids in the diet. It has not adjusted to diuretics according to their own conditions, such as high salt diet. Studies have shown that CHF patients' lack of self-management ability is to monitor body weight and urine daily and control liquid intake\cite{3}. Xiaochun\cite{4} investigated 178 cases of CHF, and found that 84.8\% of the patients did not monitor the intake and output, 80.3\% thought it was worthless to monitor the weight and intake, 66.3\% did not know how to deal with the data of body weight and intake and output, 46.1\% did not know the attentions of taking diuretics. The patient's capacity management is also affected by factors such as age, low cultural level, memory impairment, and visual loss. The inability of the medical staff to accurately assess and inform the patient's adjustment of liquid intake is also an important factor in capacity management. In the hospital, the best assessment of fluid state and monitoring of hemodynamics are important parts of nursing work, effective volume management strategy can effectively reduce the 30 day rehospitalization rate of patients with heart failure\cite{5}. Improving the patient's ability to monitor body weight and access capacity and informing the patient's criteria for adjusting the amount of entry and exit are beneficial to CHF patients to identify symptoms early and avoid liquid retention.

High Capacity Assessment

Two American Heart Failure Registry showed high capacity in patients with heart failure is common, dyspnea in the first place (respectively 89\% and 90\%), followed by crackles(67\% and 65\%), peripheral edema (66\% and 65\%)\cite{5}. Lucas\cite{6} and others evaluated the patients in
the 4-6 week after admission, and concluded that the five main symptoms of high volume were: orthopnea, peripheral edema, weight gain, increasing the amount of basic diuretics and jugular vein dilatation. Another study showed that the symptoms of worsening heart failure were new or aggravated edema, weight gain, aggravation of dyspnea, orthopnea, nocturnal paroxysmal dyspnea and jugular vein dilatation[7]. The most valuable assessment of the high volume status may be the recent history of hospitalization[5]. A nurse should not use a single evaluation method or only a few changes in symptoms to determine the patient's capacity in the assessment of heart failure.

**Capacity Management**

The goal of volume management is to reduce patients' high volume symptoms and signs; Stabilize hemodynamic state, avoid further damage to cardiac muscle cells, and reduce hospitalization caused by preventable high volume symptom recurrence.

**Vasoactive Drug**

For patients with reduced cardiac systolic function, there is still too much capacity overload when vasodilators and diuretics are used, and vasoactive drugs are used to improve the perfusion of the system. The application of vasoactive drugs can help patients to overcome the edge state that is about to be broken, in order to increase the oxygen consumption of the myocardium and increase the load of the myocardium. Once the balance is broken, the role of vasoactive drugs can only be negative, and then the patient's prognosis is worse and the mortality rate increases.

High dose use of vasoactive drugs for patients with severe heart failure is difficult to maintain circulation. Waiting for the recovery of cardiac function is a new idea for the treatment of heart failure, which is further explored.

**Diuretics**

The current application of diuretic is the main method for the treatment of heart failure, which aims to reduce the wedge pressure of the pulmonary artery in the short term and make the liquid in the state of negative balance. In patients with heart failure, the reactivity of diuretics for the same dose was lower than that of normal people. Heart failure due to cardiac output reduction in kidneys at low perfusion, decrease in renal blood flow resulting in reduced doses of drugs to the kidneys and the renin-angiotensin-aldosterone system (RAAS) activation leads to renal sodium reabsorption, fluid retention symptoms worsen. Excessive use of diuretics can lead to low potassium and low magnesium, and severe adverse reactions such as arrhythmia, impaired glucose tolerance and renal dysfunction and affect long-term prognosis and even increase the rate of rehospitalization for patients with heart failure.

**Moderate Control of Water and Sodium Intake**

The nursing staff knows that the intake of sodium salt can adjust the diet plan timely and effectively prevent the deterioration of heart failure. Excessive intake of salty foods can result in water and sodium retention, increased circulation of blood, and increased cardiac burden. The improper use of diuretics can cause hyponatremia. Gaisong[8] survey of 162 patients with CHF was found in 30.25% patients with hyponatremia. Hyponatremia causes the symptoms
of the nervous system, the motor system, and the digestive system, and the serious cause of death. Patients taking diuretics should relax the intake of sodium salt, and remind the doctors to check blood and urine electrolytes regularly in order to adjust the dosage according to the patient's condition during the nursing process. The control table of water content mentioned in the Department of Cardiology of Peking Union Medical College Hospital and the entry and exit control table are more convenient for the registration of patients with heart failure, and are recommended. Health education should be strengthened and the role of drinking water in the whole treatment process should be strengthened. The Lv Xiao Chun study showed that 1 years of entry and exit monitoring could reduce the rate of rehospitalization and mortality in patients with heart failure.

Summary

Excessive volume of blood is an important factor in the deterioration of heart failure, hospitalization and death. Excessive volume of blood is difficult to identify in the acute stage of congestive heart failure, because clinical symptoms and signs of congestive heart failure are not shown. Therefore, nurses need to master the symptoms of CHF patients and take various measures and methods of monitoring. The capacity management of CHF patients is a long process; accurate nursing management plays an important role in reducing the hospitalization rate, mortality rate and improving the quality of life.

References


