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Analysis of internal medicine emergency management and nursing intervention for hypokalemia.

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Abstract

Objective: To investigate the effect of emergency nursing measures in patients with hypokalemia.
Methods: A total of 89 patients with hypokalemia in our hospital were randomly divided into two groups from June 2014 to April 2016. A total of 44 patients in the control group received the routine treatment. Meanwhile, 45 patients with hypokalemia in the study group received the internal medicine emergency treatment depending on the specific situation and targeted nursing intervention. The effective rates, degree of satisfaction, and negative emotions were compared between the patients in the two groups.
Results: The effective rate of the study group was significantly higher than that of the control group (P<0.05), and the difference was significant (P<0.05). Furthermore, the negative emotions on admission were not significantly different between the two groups (P>0.05). After treatment, the self-rating depression scale and self-rating anxiety scale scores of the study group were significantly lower than those of the control group (P<0.05). The average serum potassium concentration of the study group before emergency treatment (2.11 ± 0.23 mmol/L) significantly increased after emergency treatment (3.82 ± 0.53 mmol/L) (t=12.211, P<0.05). Moreover, the serum potassium concentration of the control group before emergency treatment (2.13 ± 0.28 mmol/L) significantly rose after emergency treatment (2.76 ± 0.32 mmol/L) (t=5.211, P<0.05). However, the improvement of serum potassium concentration of the study group was significantly superior to that of the control group (t=4.354, P<0.05).
Conclusion: By detailed internal medical emergency treatment combined with targeted nursing, one can improve the curative effect and negative emotions in hypokalemic patients. Hence, the developed management approach is worth promoting.

Keywords: Hypokalemia, Internal medical emergency, Nursing measures, Effect analysis.

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Introduction

Hypokalemia refers to a series of clinical symptoms that result from the abnormal intake, absorption, and metabolism of potassium ions caused by various factors. The serum potassium concentration is usually less than 3.5 mmol/L. Extremely low potassium levels may directly lead to death. Thus, the early clinical diagnosis, positive treatment, and appropriate nursing of hypokalemia can effectively improve the success rate of rescue [1]. In recent years, researches on the medical emergency treatment and nursing of hypokalemia constantly emerge. Most scholars reported that hypokalemic patients require professional medical treatment, as well as elaborate nursing, as the key management approach [2]. To further establish the medical emergency, nursing plan, and application effect of hypokalemia, we conducted the present research as follows.

Materials and Methods

General data

A total of 89 patients with hypokalemia were recruited to our study from June 2014 to April 2016. These patients were randomly divided into two groups as follows: 44 cases in the control group (male/female ratio at 23/19; 19-56 years of age at an average of 35.69 ± 6.48 years) and 45 cases in the study group (male/female ratio at 25/20; 23-58 years of age at an average of 36.85 ± 6.89 years). The ages showed no statistical difference between the two groups (P>0.05).

Method

The patients in the study group accepted the medical emergency treatment. The protopathies of all the patients were positively treated, the incentives were given, and the potassium was positively supplemented depending on the severity of

hypokalemia. The following specific scheme was adopted. For mild hypokalemia, oral potassium chloride was given to stimulate gastrointestinal mucosal action. The preparation was 10-20 ml 10% potassium chloride injection mixed with an appropriate amount of milk or juice. The patients in coma or those who are vomiting were treated with 10% potassium citrate, which was later changed to potassium chloride after symptoms improved. For moderate to severe hypokalemia, potassium was given based on serum potassium ion concentration and urine volume, as follows: potassium amount (4.5-measured value × 0.3 × kg). Generally, 3-5 g potassium chloride was supplemented and increased to 8-10 g according to severity, but its dose should not exceed 0.3%. The speed of drug administration should be controlled below 1 g/h. For patients with cardiac arrest caused by hypokalemia, the drug should be diluted and injected within 1 min. Through this manner, patients' respiration and blood pressure can be effectively improved, and arrhythmia risk is reduced. When the serum potassium concentration was increased to 3 mmol/L, the rate of administration was immediately slowed down. The drug was withdrawn immediately and changed to oral administration after acceptable serum potassium levels were recovered. For nursing measures, the patients underwent positive psychological counselling after admission. This measure was performed to help the patients enter a relaxed mental state and to inform them with the basic principles of hypokalemia treatment. These actions thereby reduce the anxiety, fear, and other negative psychological states of the patients. The patients and their families were positively informed to help them understand the correct daily habits, foster patient enthusiasm, answer the questions of the patients and their families, and obtain the patient's trust. Routine treatment was given to the control group.

Observation index

The improvement in anxiety and depression was considered. The clinical effective rates and satisfaction degree of the patients in the observation group were analysed. The Self-rating Depression Scale (SDS) was used to assess the anxious emotion. Meanwhile, the Self-Rating Anxiety Scale (SAS) was used to assess the depressive emotion. The score was in the range 0-100, where 50 was the critical value. Higher scores indicate more severe anxious or depressive emotions. The clinical effective rate was excellent when the clinical symptoms of the patients after treatment improved significantly and the serum potassium concentration basically or completely reverted to normal levels. By contrast, the clinical effective rate was effective when the clinical symptoms of the patients after treatment improved and the serum potassium ion concentration increased but did not reach normal levels. Finally, the clinical effective rate was invalid when the treatment was neither excellent nor effective. The total effective rate is the sum of the excellent and effective rates. Meanwhile, the degree of satisfaction was rated as satisfied, basically satisfied, or dissatisfied. Specifically, the degree of satisfaction is the sum of the satisfaction rate and the basic satisfaction rate.

Statistical analysis

The data were processed using the software SPSS26.0. The measurement data were expressed as $\bar{x} \pm S$ and compared by t-test. The frequency data were compared by χ^2 test and expressed as (n, %). $P<0.05$ indicated statistical significance.

Results

Comparative analysis of negative emotions

Upon admission, the SDS and SAS results showed no statistical difference ($P>0.05$). These scores decreased after treatment, the difference was statistically different between groups ($P<0.05$) (Table 1).

Table 1. *Comparative analysis of negative emotions ($\bar{x} \pm S$).*

Group	Case	SDS		SAS	
		Before treatment	After treatment	Before treatment	After treatment
Study group	45	55.35 ± 12.15	30.52 ± 9.48	58.75 ± 19.04	31.52 ± 6.75
Control group	44	52.48 ± 11.85	41.75 ± 9.75	57.02 ± 18.42	46.25 ± 8.04
t		1.1278	5.4847	0.4355	9.3689
P		0.2625	0.0000	0.6643	0.0000

Analysis of the effective rate and satisfaction degree between the two groups

As shown in Table 2, the effective rate of patients in the study group was significantly higher than that of the control group, and the difference was statistically significant ($P<0.05$). Moreover, the satisfaction degree of the patients was 95.56% in the study group and 75% in the control group, and the difference was statistically significant ($P<0.05$).

Serum potassium concentrations of patients before and after emergency potassium supplement

The average serum potassium concentration of the patients in the study group before emergency treatment (2.11 ± 0.23

mmol/L) significantly increased after emergency treatment (3.82 ± 0.53 mmol/L) (t=12.211, P<0.05). Furthermore, the average serum potassium concentration of the patients in the control group before emergency treatment (2.13 ± 0.28 mmol/L) significantly increased after emergency treatment (2.76 ± 0.32 mmol/L) (t=5.211, P<0.05). However, the improvement in serum potassium concentration of the patients in the study group was significantly superior to that of the control group (t=4.354, P<0.05) (Table 3).

Table 2. *Analysis of the effective rate and satisfaction degree between the two groups (n (%)).*

Group	Effective rate				Degree of satisfaction			
	Excellent	Valid	Invalid	Effective rate	Satisfied	Basically satisfied	Unsatisfied	Degree of satisfaction
Study group	29	13	3	42 (93.33)	31	12	2	43 (95.56)
Control group	18	15	11	31 (70.45)	20	13	11	33 (75.00)
χ^2				7.8973				7.5363
P				0.0049				0.006

Table 3. *Comparison of serum potassium concentrations before and after emergency treatment ($\bar{x}$ ± S, mmol/L).*

	Time	n	Serum potassium concentration (mmol/L)
Study group	Before emergency treatment	45	2.11 ± 0.23
	After emergency treatment	45	3.81 ± 0.32
Control group	Before emergency treatment	44	2.13 ± 0.28
	After emergency treatment	44	2.76 ± 0.32

Discussion

As a common disease in internal medicine, hypokalemia usually involves complex symptoms. The basis of hypokalemic treatment is potassium supplementation. Generally, after the patients are admitted to the hospital, the doctor's routine advice is executed by the nursing staff under physician guidance, and the potassium is supplemented by oral or intravenous routines [3]. However, in recent years, many domestic and overseas researchers have supported the research direction of the emergency nursing of hypokalemia. Normal serum potassium content is essential in the maintenance of normal metabolism and physiological activities of the human body. Once hypokalemia occurs, potassium should be supplemented in a timely manner to prevent complications and treat the main symptoms [4]. In most cases, deep-vein micropump technology can achieve the excellent effect of potassium supplementation. However, under this treatment, the physical condition of critical gastrointestinal patients worsens, and the influence and treatment factors more numerous than those of other treatments. If the number of effective nursing measures not taken increases, the potassium supplementation effect will also be seriously affected. A study found that targeted nursing care based on routine clinical treatment plays an important role in alleviating fear.

Potassium chloride sustained-release tablets can significantly increase and correct the low serum potassium concentration in hypokalemic patients. Meanwhile, the blood drug concentration can be maintained up to a longer duration and only cause mild digestive tract irritation. The oral medication takes effect quickly and can prevent hypokalemia caused by potassium diuretic withdrawal [5]. The vital signs must be closely monitored during treatment. On one hand, the serum potassium concentration should be reviewed during potassium supplementation by micropump to assist the nursing staff in timely adjusting the pumping speed. The frequency should be usually controlled at 2 h. The measures should be ensured during the detection process to ensure accurate detection results. On the other hand, electrocardiogram data should also be closely checked particularly hypokalemia findings (elevated and prolonged U wave) and hyperkalemia findings (P wave disappearance and elevated T wave). The appearance of abnormalities should be immediately reported to the attending physician [6]. The other relevant data in focus include various blood gas analysis data and urine volume. Between the two bases, blood gas analysis data can guide and help prevent the severe lowering of calcium content and the acid-base imbalance in patients during potassium supplementation. Meanwhile, urine volume records can guide the selection of potassium diuretics [7].

During the process of potassium supplement, pipe leakage or falling off should be strictly avoided. Once the buzzer alarm is installed, reasonable treatment should be administered. The potassium supplementation rate should be adjusted in a timely manner to strictly avoid inducing hyperkalemia. Repeated potassium supplementation should be performed in the same position and in the same external environment. Normal saline solution should be used as solvent [8], and the rescue device must be prepared before administration. The hyperkalemia caused by hypokalemia or excessive potassium supplementation can lead to patient death. Therefore, a bedside rescue device should always be available [9]. Routine rescue devices include a defibrillator, tracheal intubation set, and respirator. A study found that targeted medical emergency

treatment can considerably increase the patients' clinical effective rate. Along with internal medical treatment, the anxiety and fear of patients can be treated in a targeted manner. Consequently, patients can feel cared for and become more receptive to treatment, which then promotes the curative effect [10]. The medical emergency and targeted nursing practices could obviously improve the clinical effective rate in hypokalemic patients. The degree of satisfaction is also significantly increased with respect to that of routine clinical treatment. The negative emotions of patients are treated, and anxiety and depression are potentially effectively alleviated.

Conclusion

For the clinical treatment of hypokalemia, refining internal medical treatment is required. Targeted nursing intervention is valuable in enhancing the therapeutic effect and patient satisfaction.

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