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Research Article

Investigation on Blood Glucose Control Nursing of ICU Severe Patients

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Abstract: ***Objective:*** To analyze the effect of blood glucose control nursing in intensive care unit (ICU) patients. ***Methods:*** The clinical data of 70 severe patients in ICU of our hospital from January 2019 to May 2020 were retrospectively analyzed. The clinical data of 34 patients with routine intervention were divided into the control group, and the clinical data of 36 patients with routine intervention and blood glucose control nursing were divided into the observation group, all were intervened for 14 days. The blood glucose levels and prognosis of the two groups were compared before intervention and at the end of 14 days of intervention, the time required to achieve the standard blood glucose level of the two groups was recorded. ***Results:*** After 14 days of intervention, the fasting blood glucose level of the observation group was lower than the control group, the difference was statistically significant (P<0.05); the time of blood glucose reaching the standard in the observation group was shorter than that in the control group, the difference was statistically significant (P<0.05); on the 14th day of intervention, the sequential organ failure assessment score (SOFA) score of the two groups was lower than before intervention, the SOFA score of the observation group was lower than control group, the difference was statistically significant (P<0.05). ***Conclusion:*** The effect of blood glucose control nursing in ICU is better, which effectively controlled the blood glucose level of patients and improved the prognosis of patients.

Keywords: Intensive care; Blood glucose control; Fasting blood glucose; Sequential organ failure assessment score

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Due to intensive care unit (ICU) severe patients' body had underwent stress condition for long time, this had resulting the disorder of internal circulation and metabolism, and also causing the increment of blood glucose level continuously. If stress hyperglycemia is not effectively prevented or controlled in time, it will increase the risk of dysfunction of other organs and tissues of patients, and patients' life would highly in risk[1]. Relevant studies have shown that the controlling of blood glucose level in ICU patients can effectively improve the prognosis of severely ill patients and reduce the risk of organ and tissue dysfunction. However, there are only few clinical research studies on the blood glucose controlling against ICU intensive care patients, which resulting controversy on the effect of blood glucose control in ICU intensive care patients[2]. Therefore, this study aims to analyze the value of blood glucose control nursing in ICU intensive care patients. The study reported as follows.

1 Data and methods

1.1 General information

The clinical data of 70 patients of our hospital from January 2019 to May 2020 who admitted to ICU with severe diseases were retrospectively analyzed. The clinical data of 34 patients with routine intervention were classified as the control group, and the clinical data of 36 patients with routine intervention + blood glucose control nursing were classified as the observation group. For the control group, there

were 19 males and 15 females with an average age of (66.81±5.13) years old (57-76 years old), and the body mass index (BMI) was 15.5-27.5kg/m^2, with an average of (21.50±2.16) kg/m^2. While for the observation group, there were 20 males and 16 females with an average age of (66.57±5.17) years old (56-76 years old) and a BMI of (22.03±2.11) kg/m^2. The data of the two groups were compared statistically (P>0.05). This study was approved by the medical ethics committee of our hospital.

1.2 Criteria

Inclusion criteria: Normal consciousness; Normal coagulation function; Complete clinical data.

Exclusion criteria: Diabetes patients; Severe organ dysfunction; Severe anemia, malnutrition, cachexia; Having immune system diseases, may require taking glucocorticoids in long-term.

1.3 Method

1.3.1 Control group

The control group was intervened by routine measures: closely monitor the vital signs of patients, and implement ECG monitoring, control of sugar intake, insulin pump infusion treatment, patients with endovascular intubation required to change dressing and infusion tube every day, patients with tracheotomy or intubation required sputum suction regularly, neuropsychiatric state of comatose patients required to be monitor closely, etc. The intervention lasted for 14 days.

1.3.2 Observation group

The observation group adopted blood glucose control on the basis of the control group, steps as follows: (1) to establish a blood glucose control group, the team leader was the deputy chief nurse, the team members were 1 co-chief nurse, 5 supervisor nurses and 5 nurses. The professional knowledge training on blood glucose control of ICU severe patients was carried out regularly, and the assessment system was established. (2) The patients were equipped with blood glucose monitoring system, and the relevant measures were improved. The baseline blood glucose was measured when the patients entered ICU, and targeted nursing was carried out according to the blood glucose level of the patients. During the nursing period, the blood glucose level of patients was strictly monitored, the blood glucose level was measured once in 2 hours through their fingertip.(3) Hyperglycemia: the goal of blood glucose level was set (fasting blood glucose), the blood glucose of patients controlled in 6.1-10 mmol/L, gave insulin pump infusion treatment, insulin pump rate is adjusted according to the blood glucose level of patients. (4) Hypoglycemia: stopped the using insulin and maintain the blood glucose value at 4.4-6.1 mmol/l. (5) Group meetings regularly, the relevant situation of blood glucose control was reviewed and summarized, found out the problems in blood glucose control and brainstorm to provide solutions, the reason of poor blood glucose control was analyzed, and improvement made. (6) During fasting period, insulin dose should be reduced appropriately, blood glucose level monitoring time should be shortened, and nutritional support program should be improved. The intervention lasted for 14 days.

1.4 Evaluation index

The blood glucose level control of the two groups was compared: before the intervention and at the end of the intervention after 14 days, the fasting blood glucose level of the patients was measured by sannuo ea-12 blood glucose meter; and the blood glucose reaching standard time of the two groups was compared. Prognosis: before the intervention and after the end of 14 days of intervention, sequential organ failure assessment score (sofa) [3] was used to evaluate the prognosis of patients. The scale included 6 items including respiration, coagulation, liver, 12 items, with a total score of 43 points. The lower the SOFA score, the better the prognosis of patients.

1.5 Statistical methods

Spss25.0 software was used for data processing to represent measurement data. Independent sample t test was used between groups, paired sample t test was used within the group, and percentage was used for counting data. Chi square test was used, P<0.05 was statistical significance different value.

2 Results

2.1 Comparison of fasting blood glucose level and time of blood glucose reaching standard level between the two groups

Before intervention, there was no significant difference in fasting blood glucose level between the two groups (P>0.05); on the 14th day of intervention, the fasting blood glucose level of the observation

group was lower than the control group, the difference was statistically significant (P<0.05); the time of blood glucose reaching the target level in the observation group was shorter than that in the control group, the difference was statistically significant (P<0.05). See Table 1.

Table 1. Comparison of fasting blood glucose level and time of reaching target blood glucose level between the two groups($\bar{x} \pm s$)

Group	Fasting blood glucose level (mmol/L)		Time of blood glucose reaching the target level (d)
	Before intervention	The intervention lasted for 14 days	
Observation group (n=36)	9.78±3.08	5.39±1.24	5.02±1.07
Control group (n=34)	9.81±2.94	6.41±1.15	7.79±1.32
T	0.042	3.563	9.670
P	0.967	0.001	0.000

2.2 Comparison of sofa scores between the two groups before and after intervention

Before the intervention, there was no significant difference in SOFA score between the two groups (P>0.05); on the 14th day of intervention, the SOFA score of the two groups was lower than before the intervention, and the SOFA score of the observation group was lower than the control group, the difference was statistically significant (P<0.05).See Table 2.

Table 2. Comparison of sofa scores between the two groups before and after intervention($\bar{x} \pm s$, points)

group	Before intervention	The intervention lasted for 14 days	t	P
Observation group (n=36)	28.64±5.12	18.65±4.37	7.334	0.000
Control group (n=34)	28.71±5.04	22.17±4.36	5.791	0.000
t	0.058	3.372		
P	0.954	0.001		

3 Discussion

Severe ICU patients were in a stress status for long time, resulting high blood glucose level. If there is no intervention on time, the organs and tissues in the body would be damaged, resulting dysfunction and increasing the risk of poor prognosis. Therefore, patients should be given more nursing intervention to control and reduce the blood glucose level of ICU patients. In the past, conventional interventions were often taken for ICU patients in clinic, but this intervention method was general and not targeted, resulting low efficiency on blood glucose intervention, which restricted its application scope to a certain extent[4].

Blood glucose control is to formulate corresponding nursing intervention measures according to the blood glucose level of patients in ICU. All the members in the blood glucose control group received systematic professional training, which can effectively improve the nursing professional level, establish the assessment system, enhance the sense of responsibility and attention of nurses, and improve the effect of blood glucose control to a certain extent. Targeted intervention programs for patients with different blood glucose levels can effectively improve the efficiency of blood glucose control, strengthen the prevention and control of hypoglycemia, adjust the monitoring rate and insulin pump dose according to the fluctuation of blood glucose, which enhances the effect of blood glucose control with a certain extent [5].Regularly organize group meetings, summarize and analyze the relevant situation and problems during the process of blood glucose control, which is conducive to find out the deficiencies in blood glucose control and improve it. Strengthening night inspection and patient information recording can effectively prevent and control the risk of hyperglycemia, it also has significant improvement on the prognosis of patients[6]. The results of this study showed that after 14 days of intervention, the blood glucose level of the observation group was lower than the control group, the SOFA score was lower than the control group, and the time of blood glucose reaching standard level was shorter than control group. This indicated that the application effect of blood glucose control in ICU intensive care is better, which effectively controlled the blood glucose level of patients, shorten the time of blood glucose reaching standard level, and improved the prognosis of patients.

In conclusion, blood glucose control nursing can control the blood glucose level of ICU patients, accelerate the time of blood glucose reaching the

standard, improved the prognosis and promote the recovery of patients.

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