Effect of Early Enteral Nutrition Nursing on Prognosis and Nutritional Status of Patients with Severe Acute Pancreatitis

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Abstract: *Objective:* To explore the impact of early enteral nutrition nursing on the nutritional status and prognosis of patients with severe acute pancreatitis. *Methods:* 136 patients with severe pancreatitis who were treated in our hospital were selected as the research subjects. They were divided into two groups with 68 cases in each group according to the nursing methods. The control group received routine care, while the observation group received early enteral nutrition care. The nutritional index levels, symptom relief time, length of hospitalization and incidence of complications were observed and compared between the two groups of patients after 2 weeks of care. *Results:* After 2 weeks of nursing, the serum albumin and prealbumin levels of the patients in the observation group were higher than those in the control group ($P < 0.05$); the abdominal pain relief time, abdominal distension disappearance time and length of hospitalization in the observation group were shorter than those in the control group, and the incidence of complications was lower than that in the control group ($P < 0.05$). *Conclusion:* The application of early enteral nutrition care in the treatment of patients with severe acute pancreatitis has a significant impact on the nutritional status of patients, shortens symptom relief and hospitalization time, and reduces the probability of complications, which is very important for improving the quality of patient prognosis.

Keywords: Severe acute pancreatitis; Early enteral nutrition intervention; Nutritional status; Complications

1. Introduction

Severe acute pancreatitis is a type of clinical multiple acute abdomen. The disease progresses rapidly and is critical. It is often accompanied by systemic inflammatory response syndrome, which can easily cause damage to multiple organ functions or even failure, posing a great threat to the patient's life safety. After the onset of severe acute pancreatitis, patients' bodies are in a state of high metabolism and consumption, coupled with abnormal digestive function, and they are prone to nutritional deficiencies. Nutritional deficiencies will aggravate the inflammatory response, prolong the treatment period and increase the probability of complications, forming a negative cycle [1,2]. Traditional routine nutrition care mostly adopts parenteral nutritional support. Although it can temporarily supplement the nutrients needed by the body, long-term use will cause intestinal mucosal atrophy, intestinal flora imbalance and other conditions, which is not conducive to the patient's physical recovery. Early enteral nutrition care provides nutrients through the intestinal route, which can maintain the intestinal mucosal barrier function and regulate the balance of intestinal flora, while reducing the

release of inflammatory factors. At present, there is a lack of comparative research on these two nutritional care models, and the comprehensive difference analysis of the effects of nursing measures on nutritional indicators and prognosis is not comprehensive enough [3]. Based on this situation, this study used group control to observe the difference in application effectiveness between early enteral nutrition care and conventional nutrition care, and provide practical reference for optimizing clinical care plans.

2. Materials and methods

2.1. General information

This study selected 136 patients with severe pancreatitis who were treated in our hospital from January 2024 to June 2025. They were divided into two groups according to different nursing methods, with 68 cases in each group. Control group: 36/32 men and women, aged 28–81 (48.14 ± 10.02) years old; observation group: 37/31 men and women, aged 32–81 (48.14 ± 10.02) years old. The comparison of the baseline data of the two groups of patients is meaningless, $P > 0.05$, and experimental comparison can be made.

Inclusion criteria: (1) Meet the diagnostic criteria for severe acute pancreatitis and be confirmed by imaging and laboratory examinations; (2) The onset time is ≤ 48 hours, and the vital signs are relatively stable; (3) The patient has clear consciousness and can cooperate with nursing operations and indicator detection; (4) There are no contraindications to nutritional care.

Exclusion criteria: (1) Combined with severe gastrointestinal diseases, liver and kidney failure; (2) Presence of coagulation dysfunction or immune function deficiency; (3) Transfer to hospital midway, abandoning treatment or incomplete nursing information; (4) Allergy to nutritional preparations.

2.2. Method

Both groups of patients received intensive care, symptomatic diagnosis and treatment, and basic nursing services. On top of this, different nutritional care plans were adopted, and the duration of care was uniformly set at two weeks.

The control group implemented routine nutritional care, using parenteral nutritional support and infusing nutritional preparations through central venous catheters. These preparations contain glucose and amino acids. The daily infusion volume is calculated based on the patient's weight and nutritional needs. The initial dose is controlled at 1000–1200 mL per day, and is gradually adjusted to 1500–2000 mL per day while maintaining a constant intravenous infusion. During the nursing period, electrolytes, liver and kidney function, and nutritional indicators are regularly tested, and the ratio of nutritional preparations is adjusted based on the test results to maintain the balance between the body's nutritional supply and demand. After the patient's intestinal function initially improves, the amount of parenteral nutrition is gradually reduced and transitioned to a liquid diet.

The observation group carried out early enteral nutrition care, and nursing intervention was initiated within 48 hours of admission. The specific methods are as follows:

(1) Nutritional preparation selection, combined with the patient's condition and nutritional needs, initially used short peptide enteral nutrition preparations. Such preparations are easily digested and absorbed and can reduce the burden on the gastrointestinal tract. After the patient's digestive function gradually improves, the transition to whole protein enteral nutrition preparations is made, and the whole process is adjusted according to the principle of step-by-step.

(2) Set up the feeding route, adopt the nasojejunal tube feeding method, use the gastroscope to assist in placing the nasojejunal tube, confirm the accurate position of the tube and then fix it, to prevent the tube from being displaced or prolapsed, causing feeding obstruction or complications.

(3) Implement the feeding plan. Start feeding at a low dose and low speed in the initial stage. The initial dose is 20–30 mL/h, and the total daily volume is 500–800 mL. It is gradually adjusted based on the patient's tolerance. The dose and speed are increased every week, and the final maintenance dose is 80–100 mL/h, with a daily total

volume of 1500–2000 mL to ensure adequate nutritional supply. During feeding, keep the temperature of the nutrient solution at around 37°C to avoid overcooling or overheating from irritating the gastrointestinal tract. At the same time, continuous pumping is used to reduce gastrointestinal discomfort.

(4) Nursing monitoring and adjustment. During feeding, pay close attention to whether the patient has abdominal pain, bloating and other gastrointestinal reactions. Monitor abdominal circumference and defecation conditions daily. Electrolytes, liver and kidney function and nutritional indicators are regularly tested, and the feeding plan is adjusted based on the test results. If the patient has a mild gastrointestinal reaction, suspend feeding for 1 to 2 hours and then slow down and restart; for patients with severe reactions, stop feeding promptly and implement symptomatic treatment.

(5) Intestinal care and basic intervention. Carry out oral care for patients twice a day to keep the mouth clean and prevent infection. Regularly assist patients to turn over and move around to promote intestinal peristalsis. When necessary, use probiotic preparations as directed by the doctor to adjust the balance of intestinal flora and maintain the barrier function of the intestinal mucosa.

2.3. Observation indicators

(1) Nutritional status indicators: Fasting venous blood was collected from the two groups of patients before nursing and after 2 weeks of nursing, and serum albumin, prealbumin and hemoglobin levels were detected to evaluate nutritional improvement.

(2) Symptom relief and hospitalization. Record the abdominal pain relief time, abdominal distension disappearance time and length of hospitalization of the two groups of patients to reflect the impact of nursing care on the course of the disease.

(3) Statistics on the incidence of complications such as pulmonary infection, abdominal infection, gastrointestinal bleeding, and electrolyte imbalance in patients.

2.4. Statistical methods

Data were processed with SPSS version 26.0 software. Measurement data were calculated with "t", and count data were verified with χ^2, expressed in mean ± standard deviation (SD) and (%), respectively. $P < 0.05$ was considered a statistically significant difference.

3. Results

3.1. Comparison of nutritional index levels between the two groups

There was no significant difference in serum albumin and prealbumin levels between the two groups of patients before nursing ($P > 0.05$); after 2 weeks of nursing, the growth rate of various indicators in the observation group was greater than that of the control group ($P < 0.05$) (**Table 1**).

Table 1. Comparison of nutritional index levels between the two groups (mean ± SD)

Group	Serum albumin (g/L)		Prealbumin (mg/L)	
	Before care	After 2 weeks of care	Before care	After 2 weeks of care
Control group ($n = 68$)	28.42 ± 3.08	31.56 ± 3.84	125.38 ± 21.72	152.46 ± 25.18
Observation group ($n = 68$)	28.36 ± 3.12	35.68 ± 4.25	125.43 ± 21.68	186.75 ± 28.34
t	0.113	5.931	0.013	7.459
P	0.910	0.000	0.989	0.000

3.2. Comparison of symptom relief and hospitalization status between the two groups

The abdominal pain relief time, abdominal distension disappearance time and length of hospitalization in the observation group were significantly shorter than those in the control group, and the comparison was meaningful ($P < 0.05$) (**Table 2**).

Table 2. Comparison of symptom relief and hospitalization status between the two groups (mean ± SD)

Group	Abdominal pain relief time (d)	Abdominal bloating disappearance time (d)	Length of hospitalization (d)
Control group ($n = 68$)	6.18 ± 1.52	7.05 ± 1.68	24.62 ± 4.38
Observation group ($n = 68$)	4.26 ± 1.08	5.13 ± 1.24	18.35 ± 3.62
t	8.491	7.583	9.099
P	0.000	0.000	0.000

3.3. Comparison of complications between the two groups

The total incidence rate of complications in the observation group was 7.35%, which was lower than that in the control group, 20.59% ($P < 0.05$). All complications were controlled after symptomatic treatment, and there were no serious adverse consequences (**Table 3**).

Table 3. Comparison of complications between the two groups (n/%)

Group	Lung infection	Abdominal infection	Gastrointestinal bleeding	Electrolyte imbalance	Total
Control group ($n = 68$)	5 (7.35)	3 (4.41)	4 (5.88)	5 (7.35)	17 (20.59)
Observation group ($n = 68$)	2 (2.94)	1 (1.47)	1 (1.47)	2 (2.94)	6 (7.35)
χ^2					6.332
P					0.012

4. Discussions

After the onset of severe acute pancreatitis, the body of patients is in a state of intense stress, with significantly accelerated metabolism and a sharp increase in nutrient consumption. Impaired pancreatic function can lead to abnormal digestion and absorption. Such patients are often prone to malnutrition. Malnutrition will reduce the body's immunity, aggravate the inflammatory response process, prolong the treatment cycle, and increase the possibility of complications, which will have an adverse effect on the patient's disease outcome [4]. Although conventional parenteral nutritional support can replenish the nutrients needed by the body, long-term implementation of this program will cause the intestinal mucosa to lose sufficient nutritional supply and atrophy, destroy the normal structure of the intestinal barrier, induce ectopic intestinal flora, and further increase the risk of infection. Early enteral nutrition care provides nutrients through intestinal infusion, which can not only meet the nutritional needs of the body but also maintain the integrity of the intestinal mucosa, regulate the stable state of intestinal flora, and reduce the secretion of inflammatory factors. The effects of the two nutritional care programs in clinical application are quite different [5].

The data of this study show that after two weeks of nursing intervention, the serum albumin, prealbumin, and hemoglobin levels of the two groups of patients were significantly higher than before the nursing intervention. At the same time, the above-mentioned index values of the observation group were higher than those of the control group. This result suggests that early enteral nutrition care is better than conventional parenteral nutrition care in improving patients'

nutritional status. Early enteral nutrition can directly provide nutritional substrates for intestinal mucosal cells, maintain the normal physiological function of the intestinal mucosal barrier, promote the gradual recovery of intestinal absorption function, and at the same time avoid the problem of insufficient nutrient absorption caused by parenteral nutritional support [6]. The initial use of short peptide nutritional preparations is in line with the patient's digestive function status after the onset of the disease. Such preparations are easily digested and absorbed and will not increase the workload of the pancreas. As the patient's digestive function gradually recovers, the patient transitions to whole protein preparations, which gradually improve the quality of nutritional supply and thus improves various nutrition-related indicators more efficiently. Serum albumin, prealbumin, and hemoglobin are core indicators that reflect the body's nutritional status. Increases in the levels of these indicators can enhance the body's immunity and lay a good foundation for disease recovery [7].

From the perspective of symptom improvement and hospitalization diagnosis and treatment, the duration of abdominal pain relief, abdominal distension subsidence, and hospitalization period in the observation group were shorter than those in the control group. It can be seen that early enteral nutrition care is more helpful in shortening the course of the disease. The symptoms of abdominal pain and bloating in patients with severe acute pancreatitis are mainly caused by pancreatic inflammation stimulation and intestinal dysfunction. Early enteral nutrition can promote intestinal peristalsis, restore normal physiological functions of the intestine, reduce gas and fluid accumulation in the intestine, and quickly reduce abdominal distension. At the same time, adequate and efficiently absorbed nutrient supply can significantly enhance the body's anti-inflammatory ability, promote the resolution of pancreatic inflammation, speed up the relief of abdominal pain, and ultimately shorten hospitalization time and control medical expenses [8].

After intervention, the total incidence rate of complications in the observation group was lower than that in the control group ($P < 0.05$), which shows that early enteral nutrition care can more effectively reduce the probability of complications. Pulmonary infection and abdominal infection are common complications of severe acute pancreatitis, which are mostly related to decreased immunity and ectopic intestinal flora. Early enteral nutrition can maintain intestinal barrier function, reduce bacterial ectopic situations, and has a better nutritional improvement effect, which can significantly enhance immunity and reduce the chance of infection. Electrolyte disorders are mostly caused by digestive dysfunction and insufficient nutritional intake. Early enteral nutrition can Early enteral nutrition gradually adjust the nutritional supply, coupled with electrolyte monitoring and supplementation, and can effectively reduce the occurrence of disorders. However, in the control group, the parenteral nutrition preparation ratio is not adjusted in time, which is prone to electrolyte imbalance. The difference in the incidence of gastrointestinal bleeding can also reflect the advantages and disadvantages of the two nursing models. Early enteral nutrition strictly controls the feeding speed and temperature to avoid gastrointestinal tract irritation.

During the implementation of early enteral nutrition care, it is necessary to strictly grasp the feeding timing, preparation selection, and feeding speed, and dynamically adjust the plan based on the patient's tolerance to avoid gastrointestinal reactions caused by blind feeding. The accuracy of the placement of the nasojejunal tube must be strictly confirmed, the patient's reaction should be closely observed during feeding, and various symptoms of discomfort should be treated promptly to ensure safe and effective care. At the same time, combined with oral care, postural care and probiotic intervention, the intestinal function and nutrient absorption effect are fully guaranteed, and the overall quality of care is improved.

5. Conclusion

In summary, early enteral nutrition care can effectively improve the nutritional status of patients with severe acute pancreatitis, shorten the course of the disease, reduce the incidence of complications, and significantly improve the quality of patient prognosis. Early enteral nutrition care can be promoted and applied clinically first, and the care plan can be optimized based on the patient's specific condition to further improve the effectiveness of care and help patients recover faster.

Disclosure statement

The author declares no conflict of interest.

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