

Application of HCH Nutrient Management Mode in Patients after Gastrointestinal Malignant Cancer

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Abstract: This study discusses the influences of early-stage movement nursing of hospital-community-home(HCH) nutrient management mode on nutritional status and prognosis of patients with gastrointestinal malignant cancer. Malnutrition is one of common complications for malignant tumor patients. The study indicates that HCH nutrient management mode is a new mode of grading nutrient management. With the bidirectional circulation and seamless connection among the hospital, community and home, nutrient management from the hospital to home has already gotten some effect in tumor patients.

1. Introduction

Gastrointestinal malignant cancer is a common disease in clinics. Its incidence rate is increasing year by year. Tumor growth will result in gastrointestinal mechanical obstruction, gastric emptying delay, digestive absorption, and abnormal body fluid lost. It is reflected in anorexia, hypoproteinemia and anemia. In later period, it also shows up pain, dyspnea and organ failure. At present, operative treatment is a main therapeutic method of gastrointestinal malignant cancer. Considering that gastrointestinal malignant cancer damages patients' constitution with varying degrees and there is operative wound and intraoperative pulling, most of patients take place nutrient intake obstruction and malnutrition or even seriously affect subsequent treatment and rehabilitation. Some studies indicate that movement can effectively promote peristalsis. To reduce incidence of stomach weakness and enhance gastrointestinal function is of great importance to rehabilitation of patients. In this study, the author discusses the influences of early-stage movement nursing of hospital-community-home (HCH) nutrient management mode on nutritional status and prognosis of patients with gastrointestinal malignant cancer. Malnutrition is one of common complications for malignant tumor patients. Some studies show that Chinese malignant tumor patients have the malnutrition risks with varying degrees, but the proportion of patients who accept malnutrition is lower. The proper nutrient management can obviously improve patients' quality of life and enhance their clinical outcomes. Particularly, continuing nutrition support for nutrition and rehabilitation of patients with old age chronic illness and tumor has a positive influence. HCH nutrient management mode is a new mode of grading nutrient management. It values teamwork, bidirectional circulation and seamless connection among the hospital, community and home, and emphasize positive participation of patients and families. The nutrient management from the hospital to the family has already gotten some effects in tumor patients.

2. Toxic and side effect evaluation of chemoradiotherapy

Toxic and side effect grading evaluation of the study refers to the acute radiation injury grading standards of the American Radiation Therapy Oncology Group.

2.1 Radioactive gastrointestinal tract infection

Table 1 Grading Standards of Radioactive Gastrointestinal Tract Infection

Levels	Symptoms
Level 0	No symptoms
Level 1	Mild dysphagia or swallow pain; need topical anesthetic and non-anesthetic analgesia or semi-liquid diet
Level 2	Moderate dysphagia or swallow pain; need anesthetic analgesia or liquid diet
Level 3	Severe dysphagia or swallow pain; accompanying with dehydration or mass quality reduction for more than 15%; need nasal feeding or venous transfusion
Level 4	Complete obstruction, anabrosis, perforation or fistulous tract

2.2 Skin reaction

Table 2 Grading Standards of Radioactive Skin Reaction

Levels	Symptoms
Level 0	No changes
Level 1	Follicle dull-red stain and dried decrustation
Level 2	Painful or bright erythema; flake wet decrustation/moderate edema
Level 3	Syncretic wet decrustation out of skin buckling and pitting edema
Level 4	Anabrosis, bleeding and necrosis

2.3 Hematologic system toxicity

Toxic and side effect of the blood system can refer to common toxic and side effect grading standards of World Health Organization's anti-cancer drugs

Table 3 Common Toxic and Side Effect Grading Standards of Anti-cancer Drugs

Indexes	Levels				
	Level 0	Level 1	Level 2	Level 3	Level 4
Hemameba ($\times 10^9/L$)	≥ 4.0	3.0-3.9	2.0-2.9	1.0-1.9	< 1.0
Blood platelet ($\times 10^9/L$)	≥ 100	75-99	50-74	25-49	< 25
Neutrophile granulocyte ($\times 10^9/L$)	≥ 2.0	1.5-1.9	1.0-1.4	0.5-0.9	< 0.5
Hemoglobin (g/L)	≥ 110	95-109	80-94	65-79	< 65
Bleeding	No	Petechia	Mild bleeding	Obvious bleeding	Severe bleeding

3. Analysis

3.1 General data of research objects

According to the established inclusion and exclusion criteria, 96 patients with gastrointestinal cancer who planned to conduct concurrent radiochemotherapy from April 2017 to March 2018 were collected. Moreover, all patients agreed to sign the informed consent. According to the patients' admission sequence, they were divided into the observational group and control group (including 48 patients in each group). 7 patients gave up in the middle way for economic hardship (3 patients in the observational group and 4 patients in the control group). 4 patients gave up treatment for too severe toxic and side effect of chemoradiotherapy (all patients came from the control group). Finally, complete data of 85 patients were obtained, including 45 patients in the observational group and 40 patients in the control group. Patients in both groups completed it according to the established tumor treatment and nutritional intervention. General clinical data of patients in both groups were shown in Table 4.

Table 4 General Clinical Data of Patients in Both Groups as Admission

	Observational group (n=45)	Control group (n=40)	t/x ²	P
Gender			0.035	0.853
Male, n(%)	29(64.4)	25 (62.5)		
Female, n(%)	16(35.6)	15(37.5)		
Age(Years old)	66.71±9.06	68.76±8.89	-0.669	0.508
Height(cm)	163.72±9.65	162.32±9.80	0.648	0.522
Weight(kg)	61.70±9.45	61.16±11.13	-0.706	0.485
BMI(kg/m ²)	23.01±2.97	23.26±3.24	-1.399	0.171

3.2 Nutritional intervention of patients in both groups during hospitalization

Intake difference of daily average energy and protein for patients in both groups as admission(before intervention) had no statistical significance. After using the different nutrition intervention mode, intake situation of total energy and protein in both research objects during the hospitalization was shown in Figure 1 and Figure 2. Except for the 1st week and 2nd week in the observational group, all of them reached the targeted energy. With the further development of anti-tumor immunity, total energy intake of patients was minimized(1457.04±457.23 kcal/d) in the 2nd week. After the 3rd week, it started increasing and reached maximum before discharge. Except for the 2nd week and 3rd week, total protein intake reached the targeted intake(1.2-1.5g/kg/d). After the control group adopted the general nutrition intervention, practical intake total energy and protein of patients in each week during the hospitalization didn't reach the targeted requirements. The targeted intake of the 2nd week reached minimum(1230.62±523.36 kcal/d). The difference between the practical intake and targeted value was 269.36±63.25kcal/d, showing the increasing tendency. Before discharge, it closed to the targeted energy. After intervention, energy nitrogen ratio of patients in the observational group was (100-130) kcal:l, meeting the targeted requirements(100-150) kcal: l, while energy nitrogen ratio of the control group was (140-180) kcal: l. Except for the 4th week and 5th week, it couldn't meet the targeted requirements, see details in Figure 3.

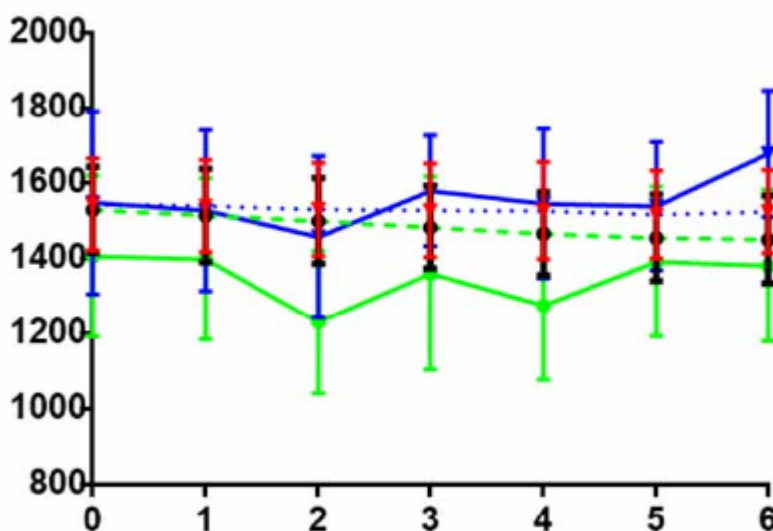


Fig.1 Total Daily Energy Intake Situation of Patients in Both Groups during the Hospitalization

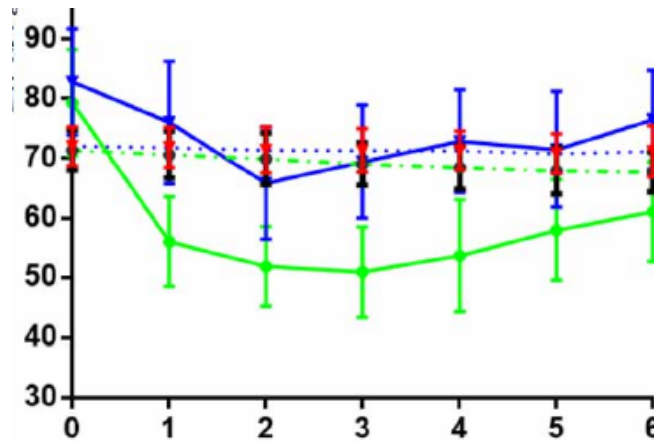


Fig.2 Total Daily Protein Intake Situation of Patients in Both Groups during the Hospitalization

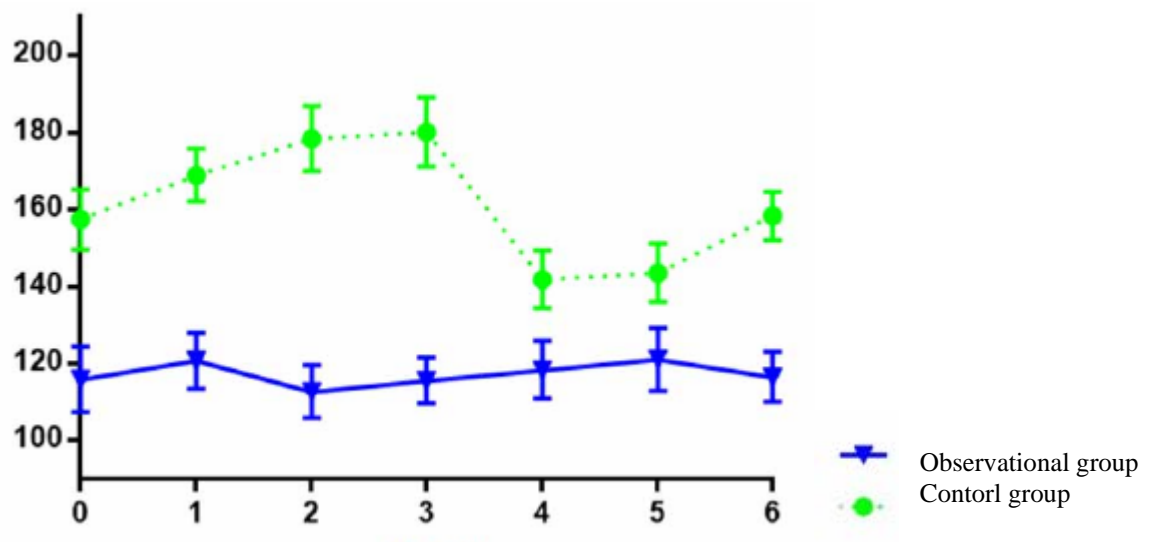


Fig.3 Dynamic Changes of Energy Nitrogen Ratio of Patients in Both Groups

3.3 PG-SAG grading comparison of patients in both groups after 6 weeks of operation

PG-SAG grading comparison of patients in both groups after 6 weeks of operation sees Table 5.

Table 5 PG-SAG Grading Comparison of Patients in Both Groups after 6 Weeks of Operation

Groups	n	Level A		Level B		Level C	
		Cases	%	Cases	%	Cases	%
Intervention group	45	38	84.4*	7	15.6	0	0.0
Conventional group	40	20	50.0	17	43.0	3	8.0

Notes: Compared with the conventional group, * $P < 0.05$

3.4 Somatology measurement index and lab index comparison of patients in both groups

Somatology measurement index and lab index comparison of patients in both groups sees Table 6.

Table 6 Somatology Measurement Index and Lab Index Comparison of Patients in Both Groups ($\bar{x} \pm s$)

Groups	n	BMI	Prealbumin(mg/L)	Albumin(g/L)
Intervention group	45	21.5 \pm 0.8*	223.2 \pm 21.7	36.2 \pm 3.6
Conventional group	40	19.1 \pm 1.6	213.2 \pm 31.7	30.5 \pm 4.4

Notes: Compared with the conventional group, * $P < 0.05$

4. Summary

Nutrient management is an important method to cure tumor patients, while hospital nutrient management has shortcomings in operation mechanism and talent team construction. Meanwhile, patients have misunderstanding on nutrient cognition. HCH mode is the new philosophy of nutrient management implemented in recent years and it emphasizes on sustainable nutrient support of patients. Patients with gastrointestinal malignant tumor experience operation, stress reaction, postoperative fasting or fluid diet. It is urgent to require for nutrition management. This study showed that prealbumin and albumin of patients in both groups have already reached the normal level, while in PG-SGA and BMI, improvement on subject feeling and nutritional status in the intervention group were more obvious, implying that applying HCH nutrient management mode provides nutrition support for patients with gastrointestinal malignant tumor after operation and improves nutrient level of patients. Main causes are stated as follows: (1) The integrated management mode of the hospital community builds the nutrition support team in line with demands. There is the professional guide of nutritionists, clinicians and trained inpatient wards and community nurses to realize the tracking services of seamless persistence from the hospital to the community; (2) Medical workers and patients maintain the regular and disciplined face-to-face contact. It can use patients to improve compliance of nutrient therapy and enhance nutrient level; (3) With common cooperation of doctors and patients, successful implementation of nutrient management is closely related to maintain patients' intention and active coordination. Patients should actively record diet diary. It is necessary to improve patients' self-management capacity and provide basis for nutrient guide of medical workers; (4) The internet platform is used to regularly improve diet education data for patients and families and realize smooth communication and timely feedback between doctors and patients, so that it is convenient to find out and solve problems in time; (5) Inpatient wards and community nurses with nutrient knowledge are main implementers of nutrient management. It has the important significance to continue nutrition support of patients after gastrointestinal tumor, find out malnutrition in time, give early intervention, and prevent from negative effects.

5. Conclusions

HCH nutrient management mode needs joint participation and coordination among the hospital, community, patients and families. To implement the individualized and sustainable nutrition support of patients and use informatization to promote effective communication and exchange is a nutrient management mode deserved to be promoted.

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