Correlation between Changes of Intestinal Flora in Patients with Rectal Cancer and Nutritional Supplementation of Immune Function Food

Ruiliang Ling[*]

Shandong Jiaotong University, Weihai, China

[*]*corresponding author*

Keywords: Rectal Cancer Patients, Changes in Intestinal Flora, Immune Function, Food Supplement

Abstract: Rectal cancer is a malignant tumor of the digestive system with a high mortality rate. At present, the most important way to treat rectal cancer is surgical resection. However, radiotherapy and chemotherapy, drug therapy, and dietary supplements are often used as adjuvant treatments. The imbalance of intestinal flora is one of the causes of rectal cancer. Enhancing the immune function of the body can improve the imbalance of intestinal flora. The purpose of this article is to explore the impact of immune function food and nutritional supplementation on the changes of intestinal flora in patients with rectal cancer and the mechanism. 20 rectal cancer patients included in our hospital in 2019 were selected as the research objects, and they were randomly divided into control group and observation group. In the control group, patients in the control group received routine nutritional intervention, and the patients in the observation group received immune function food nutritional supplements. After 10 days, feces of the two groups were extracted to detect changes in the intestinal flora, expression levels of tumor cell inflammatory factors and immune response indicators. The results showed that the number of bifidobacteria and enterococci in the observation group were 24.6% and 19.7% higher than those in the control group, the expression level of tumor inflammatory factors in the observation group was decreased by 27.2%, and the immune response index was increased by 33.6% compared with the control group. It can be seen that nutritional supplementation of immune function food can improve the imbalance of intestinal flora in patients with rectal cancer, reduce inflammatory response and improve the immunity of patients.

1. Introduction

Rectal cancer is one of the common malignant tumors. At present, the average incidence of

colorectal cancer in China has ranked second in malignant tumors, and the mortality rate is also ranked third, and there is a trend of rapid growth year by year in the future. General studies believe that, in addition to these genetic factors, environmental factors, life and work styles and poor eating habits are all regarded as risk factors that may promote the occurrence of children with colorectal cancer. Although this microorganism can be colonized almost every day in all the interiors and surfaces of the entire human body, the complex and dense microbial flora in the human gastrointestinal digestive system covers about 95% of the total microbial flora.

At present, the rehabilitation and radical treatment of rectal cancer is still a comprehensive rehabilitation treatment based on surgical treatment. The biggest obstacle to postoperative functional recovery of cancer patients [1]. There are a number of relevant scientific research tables. The obvious micro-organism barrier immune repair function auxiliary food nutritional supplements are beneficial to protect the digestive gastrointestinal barrier immune function, maintain the balance of the digestive and intestinal microbial environment, and improve the digestive and intestinal cavity bacteria. The important role of group disorders and enhancement of intestinal immunity. This article will conduct further research on this point [2].

In this article, in order to explore the effect of immune function food nutritional supplementation on the changes of intestinal flora in patients with rectal cancer and its mechanism, a large number of related materials have been reviewed. Among them, Theochares elaborated on the etiology and pathology of rectal cancer, introduced the current research status of rectal cancer in China, pointed out the problems in the medical system for cancer treatment in China, and emphasized that it is difficult to cure the rectum with the current medical level [3]. In its article, Grass introduced the specific functions of the constituent elements of the intestinal flora, pointing out that the intestinal flora is an important part of the human intestinal system, which has the function of regulating gastrointestinal function and promoting absorption, and pointed out that the imbalance of the intestinal flora will cause a series of complications [4]. In the article, Salehi elaborated on the importance of the immune function of the body to the human body, pointed out that the weakening of the immune system can cause various viruses to invade the human organs, thereby triggering various diseases, at the same time, he introduced several ways to improve immunity and reasonable diet [5]. Cui found through research that nutritional supplementation of immune function food can effectively improve the imbalance of intestinal flora in patients with rectal cancer, increase the nutritional elements of the patient's body, and also enhance the patient's immunity [6]. Through clinical research on multiple rectal cancer patients, Kim found that most patients with rectal cancer have intestinal flora imbalance, which proved that the decrease in the number of bifidobacteria and enterococci is the main cause of intestinal flora imbalance [7].

In the research on the influence and mechanism of immune function food nutrition supplementation on the changes of intestinal flora in patients with rectal cancer, this article summarizes and analyzes the research experience and results of a large number of predecessors. In addition, this article has carried out some research on the research content and research methods. Innovation, the specific innovations are as follows: First, this article uses the most advanced JG-M2000XSK transmission electron microscope produced in Japan to observe lactobacillus. Enterococcus, and Pepto streptococcus, which improves the efficiency of observation. Second, this article uses data analysis software for the first time to analyze the collected data of immune function food nutrition supplement experiments, and uses pspsy22.0 software to collect and analyze the statistical data of observation results, which greatly improves the accuracy of the research results. Third, the experimental research in this article takes colorectal cancer patients as the research object, analyzes the effects of immune function food nutrition supplement on the changes of intestinal flora, immune function and symptoms of patients, and provides reference for future perioperative management.

2. The Pathogenesis of Rectal Cancer and the Role of Nutritional Supplements

2.1. The Role of Intestinal Flora in the Pathogenesis of Rectal Cancer

Under normal human physiological differentiation, there are hundreds or even thousands of types of prokaryotic bacteria in the human body and the gastrointestinal tract. There are as many as 1×108 prokaryotic bacteria with different cell types and different hormone content. 10 times that of eukaryotic cells in the general human body. The chemical composition of bacteria in the intestinal lumen has not yet been fully clarified. Only 20% to 30% of the bacterial components in the bacterial intestine can be clearly identified by scientific methods of cell culture [8]. Approximately 70% of the lactic acid bacteria in the daily feces of adults in health surveys may constitute 5 species of symbiotic dominant sclerotium, which are considered to be lactobacillus, lactobacillus subs, and Escherichia coli. In recent years, researchers have discovered that the pathogenic flora of the gastrointestinal tract can also actively regulate and inhibit the body's immune hormone response, and participate in the regulation of energy metabolism in the body. However, under the mutual stimulation of certain environmental factors inside and outside the body, the type, quantity, structure of the bacterial population in the intestine and the characteristic changes of the metabolic enzymes in the intestine will have close corresponding physiological changes, which will easily cause the flora in the human intestine [9]. Imbalanced human intestinal epithelial flora may not only directly cause changes in the human intestinal microbial environment, but also may directly damage human intestinal epithelial cells, leading to various allergic and other intestinal diseases or inflammations in human intestinal cells. Therefore, the imbalance of the flora in the human intestine may participate in the early occurrence and development of tuberculous rectal cancer through the above two mechanisms.

A large number of clinical studies have found that there are obvious structural differences between the human intestinal flora of patients with advanced rectal cancer and the flora of healthy people. Using 16srrna model gene mutation cell gradient gel electrophoresis and ribosomal model gene interval diffraction analysis and detection technology, the small intestine microorganisms of 20 patients with voluntary benign colorectal cancer and typical glandular polyposis patients were detected. The results of population genetic analysis showed that in the small intestines of voluntary patients with colorectal cancer and typical adenomatous polyposis patients, the genetic diversity of the two dominant biological flora increased significantly. The diversity of clostridium coli flora has also increased significantly. Researchers found that the relatives of patients with non-tuberculous rectal cancer in the gastrointestinal tract, such as pseudo bacterium and bacillus vulgaris, were significantly higher than healthy patients. In addition, the researchers used a variety of quantitative PCR detection techniques to comprehensively detect two patients with advanced tuberculosis rectal cancer and healthy medical volunteers and their main intestinal flora system, and conducted a comprehensive analysis of these two DNA sequences [10]. The results showed that the biological content of Escherichia coli and fecal coliform in patients with advanced tuberculous rectal cancer and their main intestinal flora increased significantly. The researchers found that they found that some typical intestinal tissues with similar probiotic expression characteristics in the surrounding tissues and intestinal mucosa of patients with advanced nodular rectal cancer had higher levels of commensal pathogens, similar to E. coli. Potential intestinal pathogenic bacteria are still in a low concentration active state, but the morphological structure of the typical intestinal symbiotic flora of the normal intestinal tissue around the tumor is completely opposite.

Certain peroxides produced by the activity of the intestinal flora can also promote the early occurrence of colorectal cancer. The final product of abnormal metabolism of staphylococcus in stool in the human gastrointestinal tract is called hydrogen peroxide. The receptor in the epidermal

growth factor of the gastrointestinal tract directly stimulates the abnormal growth and proliferation of the deep epithelial cells of the human intestinal mucosa, which may eventually lead to the abnormal production of malignant colon and rectal malignant tumors. Intestinal pathogenic bacteria may cause malignant gene mutations in the function of white blood cells located in the intestinal mucosal epithelium through direct or indirect infection, thereby indirectly inducing the early occurrence of colorectal cancer. COBV protein cannot only directly inhibit the single-stranded DNA protein 18-10 that destroys enzymes, but the genomes of some E. coli and its intestinal bacterial strains also have the function of inhibiting COLB protein by unceded enzymes, which can indirectly participate in the prevention of tuberculous rectum early occurrence of cancer [11]. Intestinal colon cancer pathogenic Escherichia coli (EPEC) and its secreted intestinal effector coding protein (ESPF) directly act on the epithelial cells in the mucosa of the human intestinal wall, which may lead to the coding of the effector protein encoded by the intestine in the oncogene cells. Certain inhibitory functions of mutations effectively promote the early occurrence of human intestinal malignancies. The intestinal immune flora mainly triggers the inflammatory immune response of the intestinal bacterial mucosa through the intestine, and directly plays a role in the treatment of worsening colorectal cancer symptoms.

2.2. The Role and Principle of Food Nutrition Supplement in the Intestine of Patients with Rectal Cancer

Patients with rectal cancer often suffer from malnutrition due to abnormal metabolism of tumor bodies and tumor cells in the body before surgery. The intake of nutrients cannot fully meet the nutritional needs of normal humans. During the treatment process, local anesthesia and surgical stimulation put the body in a state of stress, high catabolism in the body and balance of negative oxygen, oxygen and nitrogen, and postoperative malnutrition symptoms aggravated. Malnutrition can lead to a significant decrease in the content of DNA hormones in extraintestinal cells, a large amount of protein synthesis, a decrease in the level of gastrointestinal interstitial hyperplasia, thickening and thinning of the intestinal mucosal stratum corneum in the intestinal lumen, leading to atrophy of gastrointestinal mucosal elasticity and the resulting or in secondary gastritis, the activity of digestive enzymes in the intestine and mucosa is reduced, and the bacteria in the intestine are displaced. Patients are prone to severe postoperative complications of infectious enteritis. It can also cause water secretion in the intestine and mucosa. The main adhesion and barrier of the gastrointestinal mucus are reduced or lost, and the immune system function of the intestine and mucosa is severely damaged or degraded. The stress state before and after surgery can easily lead to severe damage to the gastrointestinal immune system. Reduce the tolerance of cancer patients to chemotherapy and radiotherapy after surgery. The supplementation of nutrients in food also plays an important guiding role in providing nutritional support, regulating human immunity, and helping to maintain the immune function of the human gastrointestinal mucosal cell barrier. Adding specific immune function nutrients to various foods in appropriate amounts can not only prevent and effectively correct malnutrition in various patients, but also effectively stimulate human immune cells, increase immune function responses, and maintain normal and moderate immunity. The body's metabolic response regulates the mass production and molecular release of cellular immune factors, reduces harmful or excessive body inflammatory immune responses, and maintains the protective function of the gastrointestinal tract and mucosal immune barrier [12].

Food nutrition supplement is an effective way of nutrition supplement when gastrointestinal function is impaired. Because it is not restricted by gastrointestinal function, it has a wide range of indications. For patients with colorectal cancer, the traditional view emphasizes that the gastrointestinal function of patients after surgery is weak and requires a lot of nutrition. Therefore,

food nutrition supplement has become an important way of nutrition supplement. Facts have also proved that supplementing food nutrition is beneficial to the rectum. The nutritional treatment of cancer patients has made considerable achievements. Adding a large number of specific immune elements and nutritional chemical elements to various foods can not only prevent and effectively correct malnutrition of various patients, but also effectively stimulate human immune cells and improve immune response. Maintain the body's normal and moderate immune metabolic response, regulate the mass production and molecular release of the body's cellular immune factors, reduce harmful or excessive body inflammatory immune responses, and maintain the protective function of the gastrointestinal tract and mucosal immune barrier. The lack of enteral nutrients can directly cause the patient's intestinal mucosal barrier to be damaged, and the long-term lack of enteral nutrients can directly lead to benign atrophy of the patient's intestinal mucosa, which in turn leads to intestinal mucosal dyskinesia. The function is weakened, causing the translocation of the patient's intestinal flora (ESRT), and thereby causing various intestinal bacterial infections, and this intestinal bacterial infection is not only an important cause of pancreatic organ and kidney failure common in patients with critical liver disease, one is the Internet. At the same time, due to the lack of food enzyme stimulation on the inner wall of the patient's digestive tract, the secretion of chronic intestinal hormone enzymes such as intestinal kinin in the gallbladder is greatly reduced, and it is easy to deposit a large amount of bile mud in the patient's gallbladder. This will lead to the formation of stone cells, leading to chronic degeneration of the liver and fat cells, leading to glucose digestion and overload, and liver function will be severely damaged.

Patients with advanced rectal cancer can ensure the normal functioning of their own functions by supplementing food. Good food nutrition can not only effectively promote the normal recovery of intestinal peristalsis, but also provide a small number of calories or calories less than the patient's caloric dietary requirements for a long time. Mainly due to the fact that nutritional supplements can effectively stimulate the normal growth of gastrointestinal mucosal epithelial cells in patients, promote the normal secretion of gastrointestinal pancreatic hormones, and effectively promote the normal recovery of gastrointestinal functions in patients. In addition, it can surgically remove the lung and stomach tube early to avoid serious complications, such as bacterial infection of the lungs. A study confirmed that gastrointestinal plastic surgery and sigmoid colon paralysis are the main causes of gastrointestinal paralysis in patients after abdominal plastic surgery. If the intestinal motility function of the patient before abdominal surgery is normal, the bowel motility and digestion and absorption function of the small intestine will be fully recovered within a few hours after the operation, and they can fully receive the nutritional supplements needed for daily food 6-12 after the operation hour. At present, it is generally believed that patients should not diagnose the recovery of bowel palsy as an important sign to judge that the bowel palsy has been completely resolved or the oral drug intake is being resumed. Because even if the small intestine completely loses normal peristalsis after the operation, it will not immediately start to restore its digestion and absorption, but is the main function of nutrition. Therefore, we believe that various foods and nutritional supplement methods can be used to successfully supplement nutritional energy and synthetic protein within the first 4 hours after surgery. Studies have shown that early postoperative nutritional supplementation is safe. Relevant studies have shown that supplementing the immune function of patients with rectal cancer can improve the immune function of patients.

3. Experiments on Nutritional Supplementation of Immune Function Food

3.1. General Patient Information

This experiment selected 20 patients with rectal cancer included in our hospital from January 2019 to December 2019, including 14 adult males and 6 females. The overall average age of male

colorectal cancer patients is about 54.3 years old, and female colorectal cancer patients. The overall average age is about 57.2 years old. The colorectal cancer is randomly checked into a short-term control group and a long-term observation group. The control group colorectal cancer patients mainly receive interventions for conventional food nutrients, and the observation group colorectal cancer patients mainly receive the body's autoimmunity system function and supplementation of nutrients required by food. The detailed condition information of 20 patients is shown in the Table 1.

Table 1. Detailed condition information of 20 patients

Gender	Age	Screening time	Level	Gender	Age	Screening time	Level
Man	45	2017/3/22	Early	Man	62	2018/6/10	Mid-term
Man	52	2015/10/14	Mid-term	Female	65	2017/7/25	Early
Female	67	2017/12/18	Lates	Man	59	2019/9/16	Late
Man	48	2015/8/10	Early	Man	74	2018/9/15	Early
Man	68	2018/6/24	Late	Man	61	2018/09/15	Late
Female	76	2017/9/19	Mid-term	Female	68	2017/10/01	Mid-term
Man	66	2016/3/6	Early	Man	62	2019/12/10	Early
Female	59	2017/5/9	Late	Man	72	2017/8/24	Late
Man	70	2018/1/28	Late	Man	63	2015/5/5	Mid-term
Man	72	2017/05/15	Mid-term	Female	70	2016/10/25	Late

3.2. Food Nutrition Supplement Method for Patients with Rectal Cancer

The control group used food to supplement nutrition and energy supplement and the method of use is described as follows: on the first day after surgery, 8% mg glucose or sodium hydrochloride + 10 g dietary protein fiber 30g + 10 g glucose 5g boiled water were given orally, and kava was given on the other day nutrients such as parenteral thread to supplement the energy needed after surgery. On the first 2-3 days, you can give rigatoni enteral and parenteral nutrition 400ml + raga dietary protein fiber 30g + chlortetracycline bifidum 5g, which can be taken orally. In addition, it can reduce the consumption of cava parenteral enteral nutrition and meet daily nutritional energy required. In the first 3-5 days, all patients can be given 800ml of intestinal nutrition needed by Rui high dose + a small amount of dietary protein fiber 35g + a small amount of glucose 4g can be taken orally. In addition, a small amount of egg liquid can be taken every day.

Observation group's immune function food nutritional supplement method: the observation group adds immune function food to the control group, and uses intestinal antibacterial nutrition emulsion (TPFD, etc.) to add bifidum aureate (using bifidobacteria and lactobacillus triple complex activity Antibacterial tablets) supplement the nutrients needed to improve the function of the body's own immune system. The amount of ruining method: on the first day, quickly drip 150ml through a gastric tube at 5-20ml/h, and on the second day at 25-60ml/h. Enter 400ml, 1000-1200ml/d from day 3 to day 7 the drip rate is 50-100ml/h when the removed gastric tube is not inserted, and the gastric tube that has been removed and not removed is quickly changed to intravenous oral insufficient liquid dose is supplemented by both parties intravenously. The two sides of the gold differ in the dosage of the drug: 6g/d. A small amount of the drug is quickly mixed into platinum rein before eating for infusion, and the drip rate after eating can be changed to intravenous oral

administration, 5g each time, 2 times a day.

3.3. Stool Collection and DNA Extraction from Patients with Rectal Cancer

Weigh 5g of a fresh stool specimen of a rectal cancer patient with an electronic scale, place it in a sterile, dry collection box, and quickly store it in the laboratory's low-temperature -60℃ refrigerator within half an hour to take 0.8g mouse stool solution for later use. For the sample, add 0.5mol/l phosphate buffer (PBG) and mix thoroughly, and centrifuge in a centrifuge for 5 minutes after the test tube is overheated to low temperature. Take the following supernatant and repeat the operation in the centrifuge 4 times. Then take the above supernatant and add it to the peeps test tube again, and centrifuge at 5000r/min for 20min in a centrifuge after overheating to low temperature to collect the solution precipitation. Feed extraction and nucleic acid purification of fecal repetitive DNA: follow the instructions of the stool kit to extract fecal DNA. After the crude feed is extracted and purified, use a repeat DNA nucleic acid purifier to purify the kit for repeated DNA, and then use nucleic acid binding protein. The concentration detector detects the concentration of repeated DNA nucleic acid and the purity of repeated a260/a280. Use 2% purity agarose gel electrophoresis imaging to detect the size and structural integrity of the two fragments of CBR and DNA extracted from it, and observe in the gelatin gel electrophoresis imaging physical analysis system.

3.4. Intestinal Flora Detection

Use 18SrRNA high-throughput sequencing technology to detect intestinal flora. Extract 5-50ng DNA samples from the extracted DNA samples, amplify 18SrDNA primers in the V3-V4 region of the 18SrRNA gene, and then add the adaptor with a limited number of cycles. The formed rectal cancer tumor DNA to be sequenced passes through the AgL2500 bioanalyzer. Qubit quality detects the length and concentration of the amplicon, and then uses the Amina Miss sequencer to complete the sequencing with a $5 \times 400/250bp$ strategy. For reads that pass the sequencing quality requirements, use the 18SMet software included with misses to complete data analysis. A non-parametric statistical method (Met test) was used to classify and detect the differences in the abundance of the two groups of microbial communities, and find out the types of microorganisms with significant differences between the groups. In this study, the significant difference in the level of intestinal flora in the rectal cancer group was used for analysis.

3.5. Tumor Cell Inflammatory Factor Detection

Serotonin, which replaces the upper cortex of malignant cells in advanced colorectal cancer, can be used to detect tumor inflammatory response indicators, including malignant tumor cell necrosis response factor α (TNF-α), leukocyte activity interleukin 6 (il-6), CRP, response binding protein (CRP). The antibody immunoturbidimetric method was used to determine the antibody CRP, using a CRP assay kit. Two-molecule antibody combined with sandwich enzyme labeling method and immunoassay (ELISA) were used to simultaneously detect two TNFα and il-6, using two TNFα detection kits and using il-6 kits. The same white blood cell upper protein serum that can replace colorectal cancer and liver tumors can also be used for the detection of autoimmune system abnormalities. The index types include negative CD4+ and positive CD6+, which are detected by the American set flow cytometer.

4. Experimental Results of Changes in Intestinal Flora in Patients with Rectal Cancer

4.1. Application Evaluation Analysis of the Effect of Exercise on Blood Pressure in Elderly Patients with Nonalcoholic Fatty Liver Disease and Hypertension

The results of the study showed that the nutritional quality indicators of the two groups of patients were compared 1 day after the first supplement of food and drug nutritional quality. The food nutritional quality indicators of the two patients in the observation group were significantly higher than the treatment control group, and the nutritional quality indicators of the observation group were average. The comprehensive scores were 18.7, while the average comprehensive scores of nutritional quality indicators for the treatment control group were 12.5. The difference in food nutritional quality indicators between the two groups of patients was statistically significant (p<0.05). One day later, the average level of food nutrition quality indicators such as RBC, HB, PA, TRF, ALB and so on in the urine and serum of the two patients in the observation group was significantly higher than that of the two patients in the first group of the treatment operation, and the difference was statistically significant. Research significance (p<0.05). The specific changes of clinical indicators of the two groups of patients after nutritional supplementation are shown in Table 2.

Table 2. Changes of clinical indicators in the two groups of patients after nutritional supplementation

Data value	Observation group	Control group	P
White blood cell recovery	(52.3±4.7)	(63.9±4.5)	P<0.05
Hospital stay	(16.4±3.6)d	(22.6±1.7)d	P<0.05
Nutrition index score	(19.5±2.8)	(23.6±2.4)	P<0.05
Bowel recovery time	(24.1±3.5)h	(36.8±5.0)h	P<0.05

The results of the research and analysis show that after the body's immune function food is supplemented, the total cumulative number of the four main bacterial groups of Escherichia coli, yeast. Bacteroides, and gastrointestinal streptococcus in the intestine of patients with rectal cancer is higher than the total number of the control group. The significant increase in normal observation increased during admission (p>0.05), and the significant increase in the control group of Escherichia coli, staphylococcus, yeast. Bacteroides was increased compared to the normal observation at admission, but the significant increase was lower than the normal admission observation. The combined number of Bifidobacterium hepaticus and E. coli in the clinical body comprehensive immune system function group and food comprehensive nutrition group increased significantly (p<0.05), while the number of clinical control group did not increase significantly. The body's autoimmune suppression function was higher than that on the third day after supplementation of the main nutrients of the food. The total number of probiotics in the gastrointestinal tract of the two groups was compared to the observation results, and the number of bifidobacteria, lactobacillus, and enterococcus in the observation group was more even. It is higher than that of the control group. After observation, the number of E. coli and Staphylococcus bacteria in the two groups is lower than that of the control group. The difference value has obvious statistical significance (p<0.05). The results of the study show that rectal cancer patients receiving immune function food nutritional supplements can increase the number of bifidobacteria and enterococci in the intestinal flora. The specific data is shown in Figure 1.
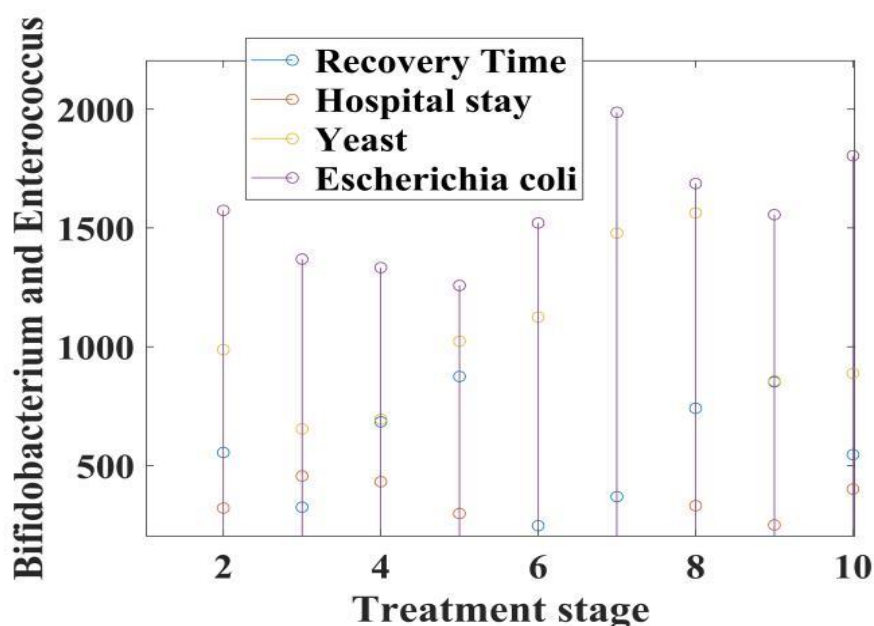
Figure 1. The effect of nutritional supplementation of immune function food on the number of bifidobacteria and enterococcus in the intestinal flora

From the data in Figure 1, it can be seen that rectal cancer patients receiving immune function food nutritional supplements can increase the number of bifidobacteria and enterococci in the intestinal flora, and the numbers of bifidobacteria and enterococci are higher than those of the control group. 24.6% and 19.7% prove that supplementation of immune function food can effectively improve the imbalance of intestinal flora in patients with rectal cancer.

The results of the study showed that the expression levels of inflammatory factors in tumor cells of patients with rectal cancer changed after the body's immune function food nutrition supplement. In the tumor cells of patients with rectal cancer, immune cells Tr, Th1, Th2 and immune cytokines TGF/mL, IL-1 (pg /mL) and IL-2 (pg/mL) expression levels are analyzed as follows: before the body's immune function food and nutrition supplement, Treg, Th1, Th2 cells and TGF-3, IL-1, IL-2 in the tumor cells of the two groups of patients. There was no significant difference in the expression level of (P>0.05). The expression level of inflammatory factors in tumor cells of the control group was significantly higher than that of the observation group on the third day after the body's immune function food was supplemented, but it was still lower than that of the body's immune function food before nutritional supplementation. 5 days after the body's immune function food was supplemented. Compared with the observation group, the expression levels of Treg, Th17, Th2 cells and TGF-3, IL-1, and IL-2 in the tumor cells of the patients in the observation group maximized the difference. The tumor cells in the observation group were Treg, Th17, Th22 cells and TGF -3. The expression levels of IL-1 and IL-2 were significantly lower than those of the control group. The results of the study show that nutritional supplementation of immune function food can effectively reduce the expression of inflammatory factors in rectal cancer tumor cells. The specific data is shown in Figure 2.

From the data in Figure 2, it can be seen that rectal cancer patients receiving immune function food nutrition supplement can effectively reduce the expression level of tumor cell inflammatory factors. The expression level of tumor cell inflammatory factors in the observation group was reduced by 27.2% compared with the control group.
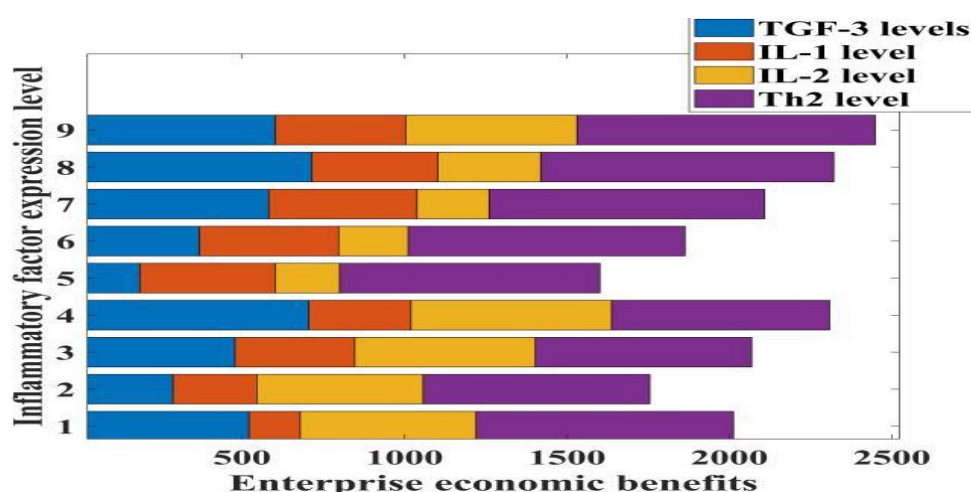
Figure 2. The effect of immune function food supplementation on the expression of inflammatory factors in rectal cancer cells

4.2. Analysis of the Effect of Nutritional Supplementation of Immune Function Food on Improving the Immunity and Treatment Effect of Patients with Rectal Cancer

In this experiment, patients with rectal cancer were supplemented with immune functional food, and patients with comorbidities were taken with personalized diet and nutritional care measures. Strictly control the type and amount of food the patient eats, with a reasonable mix, and try to improve the patient's condition and improve the patient's immune function without affecting the patient's condition. The research results in this article show that the nutritional indicators of the observation group taking human immune function food supplements were significantly higher than those of the control group. This shows that diet and nutrition management can effectively improve the nutritional status of patients after colorectal cancer surgery. Clinical studies have shown that fasting for rectal cancer surgery can easily lead to insulin resistance, suppress immune response, and even cause multiple organ dysfunction in severe cases. In this study, immune-functional food nutritional supplements were given to patients with rectal cancer to scientifically restore their gastrointestinal function, enhance their nutrition and improve their immunity. The research results show that nutritional supplementation of immune function food can improve the immune response index of patients with rectal cancer. The relevant data is shown in Figure 3.
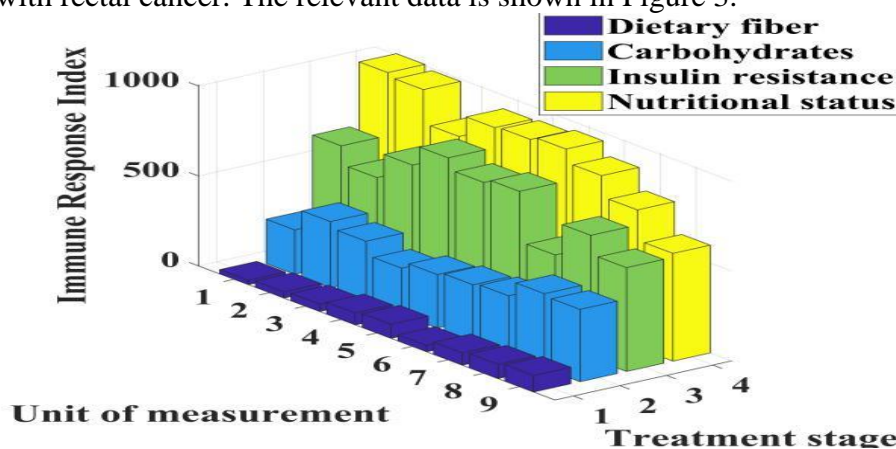

Figure 3. Results of nutritional supplementation of immune function foods in improving immune response indexes of patients with rectal cancer

From the data in Figure 3, it can be seen that nutritional supplementation of immune function food can improve the immune response index of patients with rectal cancer, which is increased by 33.6% relative to the control group, and the immune response index is increased by 33.6% relative to the control group.

The results of the study show that the quality imbalance of the intestinal mucosal flora produces carcinogenic and antibacterial effects on the entire intestine. It is very likely that the imbalance of the quality of the intestinal mucosal flora can cause serious damage to your intestinal bacterial mucosa and trigger your intestinal bacteria. The chronic inflammatory chemical reaction of the mucosa and the imbalance of the intestinal mucosal flora produce a variety of active biological enzymes and a variety of toxic bio metabolic chemical products to activate intestinal carcinogens and other ways. Bifidobacteria, lactobacilli, exist in the intestine. Beneficial flora can be closely combined with your intestinal bacterial mucosa to form an intestinal biological immune barrier, protect your intestinal mucosa from serious invasion by other biological and chemical harmful factors, and achieve the anti-cancer and antibacterial effect of the intestine. Based on the research results, this article found that the body's nutritional supplements in foods against immune system dysfunction may increase the nutritional level of beneficial bacteria such as neutral lactobacilli and bifidobacteria in the human intestine through consumption, and reduce the E. coli and intestinal tract in the human intestine. The nutritional level of harmful probiotics such as cocci affects the inhibitory effect of the beneficial intestinal flora of the human body in the inhibition process of the onset of chronic colon cancer patients. At the same time, nutritional supplementation of immune function food can also reduce the treatment complications by improving the intestinal flora. And improve gastrointestinal function. Studies have shown that nutritional supplementation of immune function food can reduce the treatment complications of patients with rectal cancer and improve the gastrointestinal function of patients. The relevant data are shown in Figure 4.
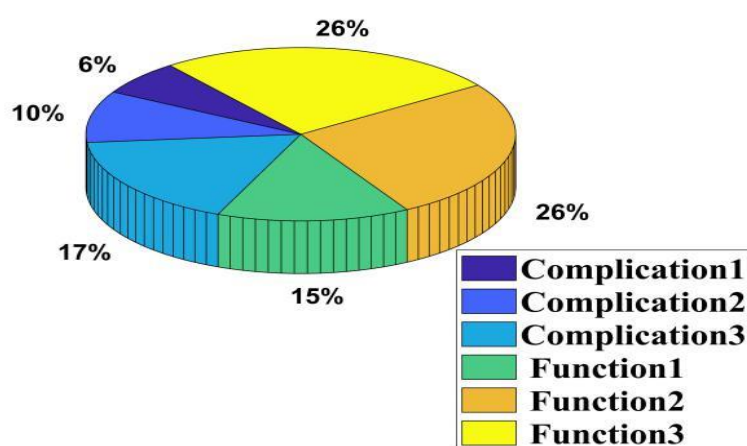

Figure 4. The effect of immune function food nutritional supplementation on the treatment complications and gastrointestinal function of patients with rectal cancer

It can be seen from Figure 4 that the body's immune function food nutrition supplement can reduce the treatment complications of patients with rectal cancer and improve the patient's gastrointestinal function, reduce the patient's treatment complications by 15.6%, and increase the patient's gastrointestinal function level by 17.9%.

5. Conclusion

(1) Rectal cancer is a malignant tumor of the digestive system. At present, the most important way to treat rectal cancer is surgical resection. However, radiotherapy and chemotherapy, drug therapy, and dietary supplements are often used as adjuvant treatments. Imbalance of the intestinal flora is one of the causes of rectal cancer. Enhancing the immune function of the body can improve the imbalance of the intestinal flora. The use of immune function food nutritional supplements can increase the nutritional elements in the patient's body, which is a common method to improve the treatment effect of rectal cancer. the way.

(2) The results of the study showed that the number of bifidobacteria and enterococci in the intestinal flora of patients in the observation group who used immune function food supplements was 24.6% and 19.7% higher than those in the control group who used ordinary food supplements. The expression level of inflammatory factors in tumor cells decreased by 27.2% relative to the control group, and the immune response index increased by 33.6% relative to the control group. It can be seen that nutritional supplementation of immune function food can improve the imbalance of intestinal flora in patients with rectal cancer, reduce inflammatory response and improve the immunity of patients.

(3) The results of the study showed that after rectal cancer patients were supplemented with immune function foods, the nutritional indicators were compared. The nutritional indicators of the observation group were significantly higher than those of the control group. The average score of the observation group was 18.7, while the average score of the control group was 18.7, 12.5. At the same time, nutritional supplementation of immune function food can reduce the treatment complications of patients with rectal cancer and improve the patient's gastrointestinal function, reduce the patient's treatment complications by 15.6%, and increase the patient's gastrointestinal function by 17.9%.

Funding

Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

References

[1] Carvalho T C , Cruz B C S , Viana M S. (2017). "Effect of Nutritional Supplementation Enriched with Eicosapentaenoic Acid on Inflammatory Profile of Patients with Oral Cavity Cancer in Antineoplastic Pretreatment: A Controlled and Randomized Clinical Trial", Nutrition & Cancer, 69(3), pp.428-435.

[2] Sada H , Kato A , Sumimoto R. (2016). "Effects of Nutritional Supplementation with Selenium and Zinc on Natural Killer Cell Activity in Hemodialysis Patients: A Single-Arm Study", International Urology and Nephrology, 48(8), pp.1377-1378.

[3] Theochares B , Vohnoutka R , Boumil E. (2019). "Beneficial and Deleterious Impact of a Nutritional Supplementation for Inhibition of Proliferation of Neuroblastoma in Culture", Nutrition and Cancer, 71(8), pp.1-10.

[4] Grass F , Bertrand P C , Sch?Fer M. (2015). "Compliance with Preoperative Oral Nutritional Supplements in Patients at Nutritional Risk--Only A Question of Will", European Journal of Clinical Nutrition, 69(4), pp.525-529.

[5] Salehi F , Abdollahi Z , Ahadi Z. (2015). "The Association Between Socioeconomic Status with Knowledge, Attitude and Practice Toward Use of Iron and Vitamin A-D Supplements Among Infants and Pregnants: the NUTRI-KAP Survey", Iranian Journal of Public Health, 44(1), pp.1-8.

[6] Cui H , Yang X , Tang D. (2017). "Effect of Oral Nutritional Supplementation on Nutritional Status and Quality of Life in Patients with Gastric Cancer after Operation (23 Cases RCT Observations)", Chinese Journal of Clinical Nutrition, 25(3), pp.183-188.

[7] Kim H , Kim M , Kojima N. (2016). "Exercise and Nutritional Supplementation on Community-Dwelling Elderly Japanese Women with Sarcopenic Obesity: a Randomized Controlled Trial", Journal of the American Medical Directors Association, 17(11), pp.1011-1019.

[8] Umar, Zubaida, Rasool, Mahmood, Asif, Muhammad. (2015). "Evaluation of Hemoglobin Concentration in Pregnancy and Correlation with Different Altitude: a Study from Balochistan Plateau of Pakistan", Open Biochemistry Journal, 9(1), pp.7-14.

[9] Stefanini M . (2015). "Cutaneous Bleeding Related to Zinc Deficiency in Two Cases of Advanced Cancer", Cancer, 86(5), pp.866-870.

[10] Schokker D , Fledderus J , Jansen R. (2018). "Supplementation of Fructooligosaccharides to Suckling Piglets Affects Intestinal Microbiota Colonization and Immune Development1", Journal of Animalence, 96(24), pp.2139-2153.

[11] Manzoli T F , Delgado A F , Troster E J. (2016). "Lymphocyte Count as A Sign of Immunoparalysis and Its Correlation with Nutritional Status in Pediatric Intensive Care Patients with Sepsis: A Pilot Study", Clinics, 71(11), pp.644-649.

[12] Gholamreza Veghari, Shima Kazemi, Masoumeh Bemani. (2015). "Hemoglobin Concentration Level during Pregnancy and Its Association with Birth Weight", British Journal of Medicine & Medical Research, 8(11), pp.988-992.