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Original Article

Effect of Shenqi millet porridge on gastrointestinal function decline

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Abstract: Objective: To explore the effect of Shenqi millet porridge on treating gastrointestinal function decline. Methods: Clinical data of 72 patients with gastrointestinal function decline were retrospectively analyzed. Patients were divided into an observation group (n=36, treated with Shenqi millet porridge) and a control group (n=36, treated with Changweikang granule) according to the treatment methods. The therapeutic effect, quality of life, nutritional status, and levels of motilin and gastrin were analyzed. Results: The total response rate of the observation group was significantly higher than that of the control group (97.22% vs. 72.22%; P<0.05). Compared with the control group, the quality of life in the observation group was increased after treatment (all P<0.05), and the total protein and body mass index in the observation group were higher than those in the control group (all P<0.05), while the levels of motilin and gastrin in the observation group were lower than those in the control group (all P<0.05). Conclusion: For patients with gastrointestinal function decline, the therapeutic regimen Shenqi millet porridge ameliorates the nutritional status of patients, as well as the quality of life and total therapeutic efficacy, also reduces the levels of motilin and gastrin. This regimen has high safety and clinical application value.

Keywords: Gastrointestinal function decline, Changweikang granule, Shenqi millet porridge, quality of life, nutritional status, motilin, gastrin

Introduction

Gastrointestinal dysfunction is characterized by abnormal functions affecting intake and excretion in the gastrointestinal tract, and often accompanied by insomnia, anxiety, inattention, forgetfulness, nervousness, headache and other functional symptoms [1, 2]. Gastrointestinal dysfunction is very common, and there is still a lack of accurate statistics about the incidence in China. Among various organs, the neurosis of gastrointestinal tract shows the highest incidence, which is most frequently seen in young female adults [3, 4]. The influencing factors of gastrointestinal function decline include gastrointestinal factors and digestive system diseases [5]. Gastrointestinal function decline can be treated by diet, that is, regular diet or digestible food. Drug therapy can also be used. For patients with poor gastrointestinal function, appropriate digestive and motility agents can be given to improve gastrointestinal function according to the condition of patients' gastrointestinal tract, but there is a lack of ideal long-term efficacy [6, 7]. In recent years, Chinese medicine has been used to regulate gastrointestinal function in clinic, showing a total response rate increased from 73.33% to 96.67% [8, 9]. Ingredients of Shenqi millet porridge include 15 grams of codonopsis pilosula, 15 grams of astragalus membranaceus, 12 grams of Atractylodes macrocephala Koidz, 6 grams of rhizoma cimicifugae, 6 grams of angelica, 3 grams of bupleurum root, 3 grams of tangerine peel, 50 grams of millet and some brown sugar. Shenqi millet porridge is effective in invigorating qi and suitable for symptoms such as fatigue or physical weakness. This study explored the effect of Shenqi millet porridge on treating gastrointestinal function decline in order to provide an effective basis for clinical treatment.

Materials and methods

General information

Clinical data of 72 patients with gastrointestinal function decline admitted to our hospital from January 2020 to January 2021 were retrospectively analyzed. Patients were divided into an observation group (treated with Shenqi millet porridge) and a control group (treated with Changweikang granule) according to the treatment methods, with 36 cases in each group. There was no significant difference in the general information between both groups (all P> 0.05). This study was approved by the Medical Ethics Committee of Shanghai Construction Group (SCG) Hospital, and all patients gave their informed consent.

Inclusion criteria: (1) Patients with conditions met the diagnostic criteria for gastrointestinal dysfunction, for instance, repeated and continuous belching, foreign body sensation in throat, distension and pain at ribs and epigastric region, stomach discomfort, no or enormous appetite, hiccups, dry or bitter mouth, oppression in chest, long breath, acid regurgitation, belching, anorexia, nausea, vomiting, burning sensation under the xiphoid process and abdominal fullness after eating and epigastric discomfort or pain, and the symptoms get worse with emotional changes); (2) Patients with good compliance; (3) Patients with complete medical records.

Exclusion criteria: (1) Patients with severe organic disease of gastrointestinal tract; (2) Patients with a history of drug allergy; (3) Patients who did not finish the treatment courses.

Methods

Patients in the control group were asked to take 8 g of Changweikang granules with warm water, 3 times a day. A course of treatment was 15 days, and there were two courses.

Chinese medicine was used in the observation group, including 10 g radix pseudostellariae, 10 g astragalus membranaceus, 2 Chinese-date and 5 g matrimony vine. The four herbs were decocted into juice, and the extracted juice was added with millet, white radish and egg white to make porridge. The porridge should be taken with sesame oil, 3 times a day. One course of treatment was 15 days, and there were two courses.

Efficacy criteria

The efficacy was divided into four grades, including clinical recovery, markedly effect, effect, and no effect. Clinical recovery: After treatment, the patients had no symptoms of gastrointestinal function decline, and no recurrence occurred after 2 months. Markedly effect: The patients' gastrointestinal function recovered significantly after treatment. Effect: The patients had mild symptoms of gastrointestinal function decline after treatment. No effect: After treatment, the patients' symptoms of gastrointestinal function decline were not alleviated or even aggravated. The total response rate = number of cases with (clinical recovery + markedly effect + effect)/total number of cases * 100%.

Outcome measures

The patients were followed up for one month. 1) Quality of life: Before and after treatment, the World Health Organization Quality of Life-Brief scale was used to evaluate the quality of life of the patients. The scale includes 5 items: appetite, sleep, mental state, daily activity, and social function. Each item scores 1 to 4 points, indicating poor to excellent [10]. 2) Nutritional status: Before and after treatment, the total protein (TP) and body mass index (BMI) were measured by the biuret method. 3) Motilin and gastrin levels: Radioimmunoassay was used to detect the levels of motilin and gastrin before and after treatment.

Statistical analysis

Statistical software SPSS 20.0 was applied for data analysis. Measurement data were represented by mean ± standard deviation ($\bar{x} \pm sd$) and tested between two groups using t-test. Analysis of variance was performed on the repeated measurement data within a group. Count data were represented by rate (%) and analyzed using chi-square test. $P<0.05$ was considered statistically significant.

Results

Comparison of general information

There was no difference in the general information between the two groups (all P>0.05), as shown in **Table 1**.

Table 1. Comparison of general information ($\bar{x}$±sd)

Item	Observation group (n=36)	Control group (n=36)	t/χ^2	P
Age (years)	49.2±8.3	50.3±8.4	1.638	0.256
BMI (kg/m^2)	19.2±3.1	20.0±3.3	1.533	0.456
Gender (n, %)				
Female	16 (44.44)	17 (47.22)	0.860	0.152
Male	20 (55.56)	19 (52.78)		
Course of disease (n, %)				
1-4 d	25 (69.44)	24 (66.67)	0.760	0.651
5-9 d	11 (30.56)	12 (33.33)		
Gastrointestinal function classification (n, %)				
I	15 (41.67)	14 (38.89)	0.450	0.245
II	16 (44.44)	15 (41.67)		
III	5 (13.89)	7 (19.44)		

Note: BMI: body mass index.

Table 2. Comparison of clinical efficacy (n, %)

Group	Clinical recovery	Remarkable effect	Effect	No effect	Total response rate
Observation group (n=36)	7 (19.44)	10 (27.78)	18 (50.00)	1 (2.77)	35 (97.22)
Control group (n=36)	4 (11.11)	8 (22.22)	14 (38.89)	10 (27.78)	26 (72.22)
χ^2					16.010
P					0.022

Table 3. Comparison of quality of life (score, $\bar{x}$±sd)

Group	Appetite	Sleep	Mental state	Daily activity	Social function
Observation group (n=36)					
Before treatment	1.35±0.23	1.30±0.21	1.40±0.22	1.45±0.28	1.36±0.25
After treatment	3.60±1.29$^{\#,*}$	3.68±1.17$^{\#,*}$	3.16±1.05$^{\#,*}$	3.44±1.13$^{\#,*}$	3.42±1.11$^{\#,*}$
Control group (n=36)					
Before treatment	1.36±0.21	1.31±0.22	1.41±0.25	1.44±0.21	1.35±0.27
After treatment	2.31±0.72$^{\#}$	2.13±0.64$^{\#}$	2.05±0.66$^{\#}$	2.47±0.78$^{\#}$	2.39±0.60$^{\#}$

Note: Compared with the same group before treatment, $^{\#}$P<0.05; compared with the control group, *P<0.05.

Comparison of clinical efficacy

The total response rate in the observation group was significantly higher than that in the control group (97.22% *vs.* 72.22%; P<0.05). See **Table 2**.

Comparison of quality of life

The scores of appetite, sleep, mental state, daily activity, and social function in the two groups after treatment were higher than those before treatment (all P<0.05). Before treatment, these scores between the two groups had no significant difference (all P>0.05). After treatment, the quality of life in the observation group was increased as compared with the control group, (all P<0.05). See **Table 3**.

Comparisons of nutritional status and levels motilin and gastrin

TP level and BMI after treatment were higher than those before treatment in both groups (all P<0.05), and the levels of motilin and gastrin showed opposite trends (all P<0.05). Before treatment, there were no significant differences in BMI and levels of TP, motilin and gastrin between the two groups (all P>0.05). After treatment, the nutritional status regarding TP

Table 4. Comparisons of nutritional status and levels of motilin and gastrin ($\bar{x}\pm sd$)

Group	TP (g/L)	BMI (kg/m^2)	Motilin (ng/L)	Gastrin (ng/L)
Observation group (n=36)				
Before treatment	44.52±7.36	17.36±1.32	301.36±9.21	258.36±9.42
After treatment	78.25±1.63$^{\#,*}$	21.35±1.86$^{\#,*}$	106.25±9.53$^{\#,*}$	41.36±7.25$^{\#,*}$
Control group (n=36)				
Before treatment	45.25±7.35	17.50±1.45	311.38±9.24	259.04±9.56
After treatment	62.46±1.86$^{\#}$	19.25±1.36$^{\#}$	156.32±9.23$^{\#}$	100.25±9.23$^{\#}$

Note: Compared with the same group before treatment, $^{\#}$P<0.05; compared with the control group, *P<0.05. TP: total protein; BMI: body mass index.

and BMI in the observation group was better than that in the control group (all P<0.05), and there were opposite trends in the levels of motilin and gastrin (all P<0.05). See **Table 4**.

Discussion

The symptoms of gastrointestinal dysfunction are complex and varied, generally seen as acid reflux, heartburn, upper abdominal fullness, abdominal pain, nausea and vomiting, ozostomia, bitter taste, diarrhea and constipation, as well as alternated tenesmus, abdominal pain, diarrhea and constipation [10-14]. Omeprazole and domperidone should be given for treatment if there is only discomfort of the upper digestive tract [15-20]. If there are symptoms of the lower digestive tract, it is necessary to carry out further treatment according to the results of colonoscopy, such as probiotic therapy. In addition, patients should pay attention to personal diet, avoid spicy and greasy food, and receive physical examination on time.

Relevant studies have shown that the nutritional status of patients with gastrointestinal dysfunction can be effectively improved by taking Shenqi millet porridge with almost no side effects, which is easily accepted by patients and their families [21-25]. This study found that the total response rate of the observation group was significantly higher than that of the control group (97.22% vs. 72.22%), which confirmed the advantage of treating with Shenqi millet porridge. The reason is that Shenqi millet porridge has a high nutritional value and an effect of dispelling dampness and is easy to be absorbed by the body. In this formula, codonopsis pilosula can tonify qi, spleen and lung for patients with weak spleen and lung, shortness of breath, palpitation, poor appetite, loose stool, asthenia, wheezing and cough, and dispersion-thirst from internal heat. Astragalus membranaceus is beneficial to invigorating qi for consolidating exterior, constraining sweat to relieve depletion, reducing sores and regenerating tissue, and inducing diuresis to alleviate edema. It is used to treat patients with qi deficiency and collapse of middle qi. Angelica dahurica can disperse wind chill, relieving pain and clearing the nasal passage.

This study also found that the quality of life, TP and BMI in the observation group were higher than those in the control group after treatment, while the levels of motilin and gastrin showed the opposite, which are consistent with the results of the above studies. This finding indicates that for patients with gastrointestinal function decline, the therapeutic regimen of Shenqi millet porridge improves the nutritional status and quality of life of patients and reduces the levels of motilin and gastrin. The reason is that Changweikang granule is a kind of pure Traditional Chinese medicine preparation, which has the effects of clearing heat, dehumidification and relieving dyspepsia. The main functions of radix pseudostellariae and astragalus membranaceus in the prescription are dispelling wind and dampness, resolving toxin and dispersing swelling, dispersing blood stasis and relieving pain, clearing heat and dehumidification. The main effect of Chinese-date and matrimony vine is to clear heat and resolve toxin, relax muscles and invigorate blood circulation, dispel wind and relieve pain. But Shenqi millet porridge can occasionally cause nausea, vomiting, rash and other side effects. In the treatment of gastrointestinal function decline caused by brain function decline, brain metastasis of liver cancer, heart failure, emphysema and postoperative chemotherapy for breast cancer, Shenqi millet porridge hits the point of

the pathogenesis, so it has good application effect on gastrointestinal function decline [26-30].

This study has some limitations. The small sample size and short observation time may cause deviations in the results. In the future, an in-depth and detailed study with expanded sample size and extended follow-up time should be further carried out.

In conclusion, for patients with gastrointestinal function decline, the therapeutic regimen of Shenqi millet porridge ameliorates the nutritional status and quality of life of patients, improves the total therapeutic effect and reduces the levels of motilin and gastrin. This regimen has high safety and clinical application value.

Disclosure of conflict of interest

None.

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