Study on the Effect of Chewing Gum on Intestinal Preparation in Patients

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Abstract: Objective: the clinical expected effect of planned chewing gum during colonoscopy patients during bowel preparation. Methods: from March to May 2019, 68 inpatients in the gastroenterology department of Shanxi Province Fenyang Hospital who needed to undergo colonoscopy were selected and divided into the control group and the observation group according to the random number table method, with 34 cases in each group. The control group used traditional bowel preparation methods for bowel preparation, while the observation group chewed sugar-free chewing gum during the interval between taking and refreshing as required. The occurrence of adverse reactions during bowel preparation, medication compliance and bowel cleanliness were evaluated in the two groups of patients. Results: compared with the control group, the observation group had fewer adverse reactions such as nausea and vomiting, improved medication compliance, and improved the effect of bowel preparation. Conclusion: chewing gum planned for colonoscopy patients during bowel preparation can improve nausea, vomiting and other adverse reactions and medication compliance, improve the effect of bowel preparation, and provide a guarantee for the smooth progress of colonoscopy. Clinical effect Good and worth promoting.

Keywords: *colonoscopy; sham feeding; adverse reactions; intestinal cleanliness*

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In recent years, with the high incidence of colorectal cancer, colonoscopy has gained important significance. Studies have shown that about 20% of unqualified bowel preparations are related to patients' inability to tolerate large doses of Hexing, and some patients even report that the bowel preparation process is more painful than undergoing colonoscopy. Poor bowel preparation reduces the success rate of colonoscopy. How to shorten the bowel preparation time, reduce the pain of patients during bowel preparation, and then improve the quality of bowel preparation cleaning for patients is a common concern of medical staff. In this study, chewing gum in a planned way during colonoscopy can stimulate the peristalsis of the gastrointestinal tract, shorten the time of bowel preparation, improve adverse reactions such as nausea and vomiting, and improve medication compliance, thereby improving the effect of bowel preparation. Ensure the smooth progress of the inspection.

1 Clinical Materials

1.1 General information

From April 2019 to September 2019, 68 in-patients in the digestive department of Shanxi Fenyang Hospital who met the standard and needed colonoscopy were selected and divided into two groups according to the random number table: 34 patients in the control group and 34 patients in the observation group. The control group consisted of 20 males and 14 females; The average age was 41.6 years old, ranging from 20 to 70 years old; Education level: 10 cases in primary school, 24 cases from technical secondary school to undergraduate; The traditional intestinal preparation method was used for intestinal preparation. The observation group consisted of 19 males and 15 females; The average age was 44.5 years old, ranging from 22 to 72 years old; Education level: 12 cases in primary school, 22 cases from technical secondary school to undergraduate; The observation group chewed sugarless gum during the interval between taking and relaxing as required. There was no significant difference between the two groups in terms of gender, age and educational level ($P>0.05$), which was comparable.

1.2 Inclusion criteria

Patients who plan to undergo colonoscopy in the endoscopy center of our hospital; Take compound polyethylene glycol electrolyte powder for bowel preparation; can chew gum independently; Aged 18-75 years old; voluntarily participated in this study and signed the informed consent.

1.3 Exclusion criteria

Mental illness, abnormal heart and lung function, history of abdominal surgery; Habitual constipation (long-term oral laxatives or topical laxatives); Those who cannot tolerate the required water during bowel preparation; Those who have abdominal discomfort, nausea, and vomiting before taking; Informed consent forms cannot be signed.

1.4 Materials

Compound polyethylene glycol electrolyte powder

(trade name: Heshuang, Shenzhen Wanhe Pharmaceutical Co., Ltd.), consisting of 5.68g anhydrous sodium sulfate, 1.46g sodium chloride, 0.74g potassium chloride, 1.68g sodium bicarbonate, and 60g polyethylene glycol 4000; Xylitol sugar free gum (Yida) 8 capsules; Colonoscopy.

2 Treatment Methods

Both groups of patients were guided by the same responsible nurse with specialized knowledge for bowel preparation, and explained the purpose, operation process, cost, possible complications of colonoscopy to the patients and their families, and obtained the understanding and cooperation of the patients and their families. and signed the informed consent.

2.1 Control group

Colonoscopy routine bowel preparation and guidance, that is, the day before the examination, eat a low-residue diet, and stop eating after 8:00 p.m. Start taking 2 bags of compound polyethylene glycol electrolyte powder at 10:00 on the day of the examination, each bag is dissolved in 1 000 mL of warm water (water temperature ＜25 ℃), a total of 2L. Take 250 mL every 15 minutes, and it takes 2 hours to drink it all [1].

2.2 Observation group

The method of taking is the same as the control group. The difference from the control group is that the research subjects chew a xylitol sugar-free chewing gum (Yida) at the interval after drinking 250 mL. The time for each person to finish drinking 250 mL is not uniform. There is no uniform rule on the chewing time of each tablet. A total of 8 chewing gums. During taking, the chewing condition of the chewing gum was confirmed by the nurse in charge.

3 Curative Effect Observation

3.1 Observation index

The first defecation time and the last defecation time were compared between the two groups; the adverse reactions and patient compliance were compared between the two groups; the bowel preparation quality was compared between the two groups.

3.2 Statistical methods

SPSS 17.0 statistical software was used to analyze the data, and the count data were represented as examples, and the X^2 test was used. $P<0.05$ means the difference is statistically significant.

3.3 Results

Table 1 shows the comparison results of adverse reactions, medication compliance and intestinal quality of colonoscopy patients between the two groups.

Table 1 Comparison of adverse reactions, medication compliance and bowel quality in colonoscopy patients between the two groups [cases (%)]

Group	Number of cases	Adverse reactions	Intolerance to medication	Intestinal quality (grade III -IV)
Observation group	34	1 (2.94) △	2 (5.88) △	3 (8.82) △
Control group	34	8 (23.53)	11 (32.35)	12 (35.29)

Note: Compared with the control group, △ $P<0.05$

4 Discussion

Electronic colonoscopy is an important means to diagnose and screen colon diseases, and its diagnostic accuracy and treatment safety largely depend on the quality of intestinal preparation [2]. Adequate intestinal preparation means that all polyps ＞ 5mm in the intestinal tract can be detected under endoscopy [3]. It is the basic condition to improve the speed of lens entry, so as to fully observe the colon mucosa, to accurately obtain living tissue samples, and successfully conduct endoscopic treatment, and to reduce the local infection after surgery [4]. Poor intestinal preparation will not only reduce the detection rate of adenoma, the success rate of cecal intubation, and the detection rate of polyps in colonoscopy, It will also significantly prolong the operation time, aggravate the pain of patients, increase adverse reactions, shorten the interval between colonoscopy again, and increase medical expenses [5]. The ideal bowel preparation method for colonoscopy [6] should have the following characteristics: ① It can empty the feces in the colon in a short time; ② No change of colon mucosa; ③ It will not cause discomfort to patients and has good compliance; ④ Do not cause water electrolyte disorder; ⑤ The price is moderate. There are many methods of bowel preparation before colonoscopy, and different preparation methods have different cleaning effects and adverse reactions. The adverse reaction of intestinal preparation will lead to poor compliance of patients, making them unable to prepare intestinal tract completely as required, or even giving up intestinal preparation. The research results of Zhang Yuanyuan et al. [7] also show that chewing gum can effectively reduce the occurrence of nausea, vomiting and other adverse reactions in patients taking medicine during colonoscopy.

Therefore, it is very important to choose a bowel preparation method with good cleaning effect, less adverse reactions and a wide range of applications. This article proves that chewing gum during intestinal preparation can reduce discomfort of patients, improve

medication compliance, and improve the quality of intestinal preparation. According to the Boston Bowel Preparation Rating Scale (BBPS) [8] (Grade I - Grade IV), the quality of intestinal preparation can reach Grade I - Grade II.

Some studies have shown that chewing gum can promote the recovery of gastrointestinal function in patients after abdominal surgery [9], and there is also evidence that chewing gum during capsule endoscopy can shorten the time of capsule passing through the stomach, and increase the proportion of capsule endoscopy reaching the ileocecal valve, which suggests that chewing gum can promote gastrointestinal motility. The possible physiological mechanism is that chewing gum is a form of false feeding. The false feeding method was used to study the first gastric juice secretion, that is, food does not enter the stomach, but can cause gastric juice secretion. The specific methods include chewing and spitting, chewing gum, etc. [10]. Its principle is to activate the secretion of gastric juice in the first stage, promote the secretion of gastrointestinal hormones and gastrointestinal motility. The behavior of false feeding and chewing stimulates intestinal motility through the mechanism of "head vagus nerve", which is an unconditioned reflex. During chewing, chewing gum can stimulate the receptors in the mouth, pharynx, throat, etc. Through the 5th, 7th, 9th, and 10th pairs of nerve afferent centers, the vagus nerve efferent reflex causes gastric juice secretion, thus promoting the acceleration of gastrointestinal peristalsis [11].

To sum up, chewing gum can promote the secretion of gastrointestinal fluid, thus promoting the peristalsis of gastrointestinal tract and shortening the time of intestinal preparation of patients; It is convenient, economical, safe, and sugar free gum has a high permeability effect, can stimulate intestinal emptying, and is conducive to intestinal cleaning; Because of its refreshing and sweet taste, chewing gum is easy for patients to feel relaxed and increase their sense of self comfort during chewing, enabling patients to complete the whole medication process in a relaxed state, reducing the incidence of adverse reactions in patients' intestinal preparation, improving patients' medication compliance and improving the effect of intestinal preparation, and providing guarantee for the smooth progress of colonoscopy. This method is economical, convenient, convenient for nurses to intervene, non-invasive for patients, less dangerous, and worthy of clinical promotion.

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