

Effects of Auricular Pressure on Gastrointestinal Function in Patients after Gastrointestinal Surgery

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Chen: Effects of Auricular Pressure on Gastrointestinal Function

In order to discuss the clinical effects of auricular pressure on gastrointestinal function in patients after gastrointestinal surgery, 116 patients were randomly divided into the observation group (n=58) and the control group (n=58) according to the digital table method. The control group were given the conventional therapy and the observation group were given auricular pressure based on the control group, then the gastric motility, intestinal function, incidence of postoperative gastroparesis syndrome and the effective rate of pain

were contrasted between the 2 groups. The results showed that there was no significant difference in initial gastric volume and initial gastric pressure between the two groups; maximum gastric tolerance volume and maximum gastric tolerance pressure in the observation group were significantly higher than the control group, gastric compliance in the observation group was significantly better than the control group ($p < 0.05$). Postoperative recovery time of bowel sounds, anal exhaust time and defecation time in the observation group were significantly shorter than the control group ($p < 0.05$); the effective rate of pain in the observation group was 89.7 %, significantly higher than 69.0 % in the control group ($p < 0.05$), incidence of postoperative gastroparesis syndrome was 1.7 % in the observation group, significantly lower than 15.5 % in the control group ($p < 0.05$). In conclusion, auricular pressure could effectively and quickly alleviate gastrointestinal dysfunction and pain after gastrointestinal surgery and reduce the incidence of postoperative gastroparesis syndrome, which is worthy of promotion.

Key words: Auricular pressure, gastrointestinal surgery, gastrointestinal function, combination of Chinese and western medicine, recovery

In recent years, the incidence of gastrointestinal malignancy has been increasing and surgical treatment is the preferred treatment for patients with gastrointestinal cancer^[1]. Gastrointestinal surgery and intraoperative anesthesia can lead to gastrointestinal dysfunction in patients after gastrointestinal surgery, which is often manifested as weakened gastrointestinal motility, dyspepsia, and constipation, which are not conducive to patients' postoperative recovery and also bring adverse psychological effects to patients^[2,3]. Currently, there is no specific treatment for gastrointestinal dysfunction after gastrointestinal surgery, which mainly assists gastrointestinal movement through intravenous medication, oral medication, acupuncture, massage, enema, and other methods to alleviate the clinical symptoms of patients^[4,5]. In recent years, traditional Chinese medicine has been widely used in the medical field of China, and it has shown ideal effects in clinical application. Through the combination of treatment based on syndrome differentiation and flexible drugs, the therapeutic effect can be enhanced without increasing the incidence of adverse reactions and side effects^[6]. Among those, though acupoint pressure, drugs can be observed through the skin, and the special effect of drugs on acupoints can be used to regulate and treat postoperative complications of patients. In order to investigate the effect of auricular pressure on gastrointestinal function after gastrointestinal surgery, a retrospective analysis was conducted in this study. The results were as reported below.

A total of 116 patients who received gastrointestinal surgery in a hospital from May 2017 to March 2019 were selected as research subjects, including 68 males and 48 females, aged 46-72 y, with an average

age of 58.3 ± 12.2 y. There were 43 cases of gastric cancer and 73 cases of colorectal cancer. All the patients underwent surgery under general anesthesia and all patients had disappeared or weakened bowel sounds, no discomfort such as exhaust and defecation, abdominal distention, abdominal pain, nausea, and vomiting. Patients with other gastrointestinal diseases, patients with dysfunction of heart, liver, lung and other important organs, patients with gastrointestinal dysfunction caused by non-surgery, women in pregnancy or lactation, patients with skin ulceration and infection at the location of auricular pressure, and patients with a history of mental illness were excluded. All patients and their families were informed of this study and signed the informed consent. This study was approved by the hospital ethics committee. The above 116 patients were randomly divided into the observation group and control group by a number table method, with 58 patients in each group. There was no statistical difference in gender, age, surgical site between the two groups ($p > 0.05$), suggesting comparability.

Patients in the control group were given intravenous albumin infusion to prevent and correct postoperative hypoproteinemia and potassium supplementation to prevent and reduce postoperative hypokalemia. After surgery, the patients fasted and were banned from taking water to relieve gastrointestinal pressure, they were given fluid replenishment to correct the imbalance of acid-base and electrolyte and acid inhibition treatment to reduce gastrin level. If necessary, antiinfective treatment was given. For patients with severe disease, oxygen might have to be taken. Liver and kidney function were reexamined regularly after surgery. After 6 h in bed, the patient was assisted to turn over at a

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frequency of every 2 h. On the d 2 after the operation, the patient can be assisted to sit on the bed for rest, and on the d 3 after the operation, the patient can be assisted to get out of bed.

The patients in this group were treated with auricular pressure on the basis of the control group. The specific method of auricular pressure included alcohol was used to disinfect the auricular points, and the cowherb seed were taped to the acupoints (shenmen, sympathetic, subcortex, large intestine, small intestine, stomach, and other acupoints) and then pressed to the auricular points. The pressing force was medium and it was appropriate for the patient to have a feeling of numbness. The adhesive tape of cowherb seed was fixed on the acupoints and pressed 5 times a day for 1-2 min each time. The adhesive tape of cowherb seed was replaced every 2 d, and it was done alternately in both ears. And 2 w was a treatment course. If any moist and redness of local skin in the process of auricular pressure was noticed, the cowherb seed should not be replaced in time, and the pressing part should be replaced as much as possible; if there was blisters or rashes, the pressing parts should be replaced in time to avoid local skin rupture and infection; when pressing, it should not be rubbed to prevent damage to the local skin and auricle.

Gastric motility, initial gastric volume, initial gastric pressure, maximum gastric tolerance volume, maximum gastric pressure tolerance, and gastric compliance were compared between the 2 groups. Gastric compliance = (maximum gastric tolerance volume–initial gastric volume)/(maximum gastric tolerance pressure–initial gastric tolerance pressure). Incidence of postsurgical gastroparesis syndrome (PGS), diagnostic criteria of PGS^[7] were 6-12 d after gastrointestinal surgery, symptoms such as abdominal fullness and vomiting appeared without abdominal pain and at the same time, the bowel sound was weakened. If gastrointestinal decompression was performed, the symptoms disappeared after gastrointestinal decompression, but the above symptoms reappeared after gastrointestinal decompression was stopped. The incidence of PGS was compared between the 2 groups.

The recovery time of postoperative bowel sounds (after the operation a stethoscope was used to auscultate the abdomen around the umbilicus for 1 min every 1 h, and when two continuous bowel sounds were heard and the frequencies were greater than or equal to 3 times/min, the bowel sounds returned to normal), anal exhaust time (the time from the end of the operation

to the first anal exhaust) and defecation time (the time from the end of the operation to the first defecation) were observed in the 2 groups.

According to the pain grading standards formulated by the international pain association^[8], the assessment was conducted at 1 w postoperatively, firstly, the pain perception was significantly reduced, and the pain grade was more than or equal to 2 levels better than before, which was considered as significant effect; secondly; the pain was relieved and the pain grade was improved by 1 level, which was considered effective. Thirdly, pain without significant relief or even aggravation was considered invalid. Effective rate (%) = (number of cases with significant effect+number of effective cases)/total number of cases×100.

SPSS19.0 statistical software was used for data analysis, measurement data were expressed as ($\bar{x}\pm s$), and t-test was used for comparison of mean between the two groups. The effective rate was analyzed by χ^2 , and $p<0.05$ was considered statistically significant.

There was no significant difference in the initial gastric volume and pressure between the 2 groups ($p>0.05$). The maximum gastric tolerance volume and pressure in the observation group were significantly higher than those in the control group ($p<0.05$). Meanwhile, gastric compliance of the observation group was significantly greater than that of the control group ($p<0.05$), as shown in Table 1. Postoperative bowel sound recovery time, postoperative anal exhaust time and postoperative defecation time were significantly shorter in the observation group than in the control group ($p<0.05$), as shown in Table 2. After the above treatment, the effective rate of pain in the observation group was 89.7 %, which was significantly higher than that in the control group (69.0 %, $p<0.05$). The incidence of PGS in the observation group was 1.7 %, which was significantly lower than that in the control group (15.5 %, $p<0.05$), as shown in Table 3.

Gastrointestinal dysfunction is one of the common complications after abdominal surgery, especially after gastrointestinal surgery. The main clinical manifestations of patients are abdominal distension, nausea, vomiting, difficulty in anal exhaust and defecation. Postoperative gastrointestinal dysfunction affects the nutritional intake of patients, resulting in slow postoperative recovery, slow wound healing or even non-healing, intestinal obstruction, intestinal adhesion, postoperative bleeding, anastomotic fistula. In addition, difficulty in oral feeding due

TABLE 1: COMPARISON OF POSTOPERATIVE GASTRIC MOTILITY IN TWO GROUPS OF PATIENTS

Groups	Cases	Initial gastric volume (ml)	Initial gastric pressure (kPa)	Maximum gastric tolerance volume (ml)	Maximum gastric tolerance pressure (kPa)	Gastric compliance (score)
Observation group	58	102.4±15.3	3.02±0.43	187.4±19.1	5.46±0.53	35.22±7.56
Control group	58	101.8±15.5	2.98±0.42	178.2±18.8	4.23±0.51	32.33±7.52
T		0.2098	0.5068	2.6144	12.7356	2.0641
P		0.8342	0.6133	0.0101	0.0000	0.0413

TABLE 2: COMPARISON OF POSTOPERATIVE INTESTINAL FUNCTION RECOVERY BETWEEN THE TWO GROUPS

Groups	Cases	Postoperative bowel sound recovery time (h)	Postoperative anal exhaust time (h)	Postoperative defecation time (h)
Observation group	58	23.8±16.2	46.3±5.5	33.4±16.5
Control group	58	41.2±16.4	61.2±5.7	40.4±16.3
T		5.7485	14.3261	12.1281
P		0.0000	0.0000	0.0000

TABLE 3: COMPARISON OF POSTOPERATIVE PAIN AND PGS INCIDENCE BETWEEN THE TWO GROUPS: N (%)

Groups	Cases	Postoperative pain			Incidence of PGS
		Significant effect	Effective	Invalid	
Observation group	58	25(3.1)	27(6.6)	6(0.3)	52(9.7)
Control group	58	15(25.9)	25(43.1)	18(31.0)	40(69.0)
x ²		3.8158	0.1394	7.5652	7.5652
P		0.0508	0.7089	0.0060	0.0060

to gastrointestinal dysfunction further reduces the mechanical barrier function of the gastrointestinal mucosa and seriously reduce the postoperative quality of life of patients^[9,10]. In recent years, with the continuous updating of surgical concepts, rapid rehabilitation surgical techniques have become more and more popular among clinical medical personnel and patients, and the rapid recovery of gastrointestinal function after surgery is undoubtedly the top priority of rapid postoperative rehabilitation^[11]. Therefore, early recovery of gastrointestinal function after surgery is of great significance in speeding up postoperative recovery and improving postoperative quality of life. In the past, domestic and foreign methods for postoperative gastrointestinal function recovery mainly rely on symptomatic and supportive treatment of drugs. Although it can relieve the symptoms and signs of patients at that time to a certain extent, the side effects are relatively large. For patients with low resistance after surgery, it is more likely to cause a series of adverse reactions. Therefore, it is particularly important to explore a more safe and effective method with fewer side effects to improve the gastrointestinal function of patients after surgery. In recent years, the application of traditional Chinese medicine in clinical

medicine has shown irrefutable efficacy with less side effects and adverse reactions, which is becoming popular among clinical medical staff and patients. Auricular pressure is one of the external therapies of traditional medicine. Due to its advantages of simple operation, economic benefit, few side effects and no trauma, auricular pressure has shown a good curative effect in the adjuvant treatment of a variety of clinical diseases^[12]. In order to explore the clinical effect of this treatment on the recovery of gastrointestinal dysfunction in patients after gastrointestinal surgery, 116 patients after gastrointestinal surgery were divided into 2 groups in this study. Among them, patients in the control group were given only the conventional treatment after surgery, and the observation group was supplemented with auricular pressure treatment on the basis of the control group. Gastric motility, intestinal function recovery, the incidence of PGS, and postoperative pain were compared between the two groups. The results showed that in terms of gastric motility, there was no significant difference in the initial gastric volume and initial gastric pressure between the 2 groups, while the maximum gastric tolerance volume and maximum gastric tolerance pressure of the observation group were significantly higher than those

of the control group, and the gastric compliance of the observation group was significantly better than that of the control group. The results showed that gastric motility in the observation group was significantly better than that in the control group. In terms of intestinal function recovery, postoperative bowel sound recovery time, postoperative anal exhaust time and postoperative defecation time in the observation group were significantly shorter than those in the control group, indicating that the intestinal function recovery in the observation group was significantly faster than that in the control group. The incidence of PGS in the observation group was significantly lower than that in the control group, and the effective rate of postoperative pain was significantly higher than that in the control group.

All of the above results were able to confirm that the gastrointestinal function was significantly better than that of the control group after a course of treatment for patients in the observation group who received auricular pressure treatment. The traditional Chinese medicine believes that the ear is gathered by the assembled channels, the twelve meridians of the human body are connected to the ear, and the organs of the whole body are connected with the ear. Auricular points are the interconnections between auricle skin and meridian, viscera, organs, tissues, and limbs. By pressing on these reflex areas and stimulating by traditional Chinese medicine, the therapeutic effect on the corresponding organs and tissues can be achieved^[13]. In this study, the auricular acupoint adherent carrier is the cowherb seed, which has the functions of regulating spleen and stomach, clearing heat and detoxification, and dredging channels and collaterals. In this study, auricular pressure treatment is mainly to press the auricular point related to spleen, stomach and intestines with the help of the pharmacological effect of cowherb seed to dredge the meridians, invigorate spleen, supplement qi, and harmonize the spleen and stomach, so as to effectively restore gastrointestinal function and promote gastrointestinal peristalsis^[14]. To sum up, in this study, it believes that auricular pressure can effectively and rapidly relieve gastrointestinal dysfunction and postoperative pain of patients after gastrointestinal surgery, and reduce the incidence of PGS, which is worthy of clinical promotion and application.

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