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Observation on the effect of acupuncture warm moxibustion and gua sha in the treatment of constipation in Parkinson's disease with qi deficiency

Zhou Yingying[1,a], Nie Ya'e[2,b,*], Qu Yan[2], Fan Yaxin[2], Ma Minghui[2]

[1]School of Nursing and Rehabilitation, Xi'an College of Translation, Xi'an, 710105, Shaanxi, China
[2]Xi'an Hospital of Traditional Chinese Medicine, Xi'an, 710001, Shaanxi, China
[a]377407602@qq.com, [b]1615802613@qq.com
[*]Corresponding author

Abstract: *In this paper, we would like to investigate the efficacy of acupuncture warm moxibustion and gua sha in treating Parkinson's disease qi deficiency constipation, the study subjects were 80 patients with Parkinson's disease qi deficiency constipation patients who visited Xi'an Traditional Chinese Medicine Hospital from February 2022 to February 2023, and were randomly divided into the control group and the experimental group of 40 cases each, the patients in the control group were given oral marengine soft capsules, and the experimental group was implemented with acupuncture warm moxibustion and gua sha therapy, and we compared the Bristol Stooliness Scale (BSFS), Chronic Constipation Severity Scale (CSS), and Constipation Quality of Life Scale (PAC-QOL) scores were compared between the two groups. The results suggest that, compared with the pre-treatment, the CSS score and PAC-QOL score of the two groups of patients decreased significantly after treatment, and the BSFS score improved significantly, and the difference was statistically significant (P < 0.001), and the efficacy of the experimental group after treatment was 95%, which was higher than that of the control group, which was 82.5%, and the difference was statistically significant (P < 0.05). It indicates that acupuncture stone warm moxibustion scraping therapy can effectively improve the constipation symptoms and quality of life of patients with Parkinson's disease qi deficiency constipation, the efficacy is better, and it is worthy of clinical promotion and application.*

Keywords: *Parkinson's disease, Qi deficiency and constipation, acupuncture and moxibustion, Gua Sha*

1. Introduction

Parkinson's disease (PD) is a common neurodegenerative disease in middle-aged and old-aged patients, and its clinical manifestations are divided into motor and non-motor symptoms, and constipation is one of the most prominent non-motor symptoms[1], the incidence of constipation in Parkinson's disease (hereinafter referred to as "PD constipation") is 20%-89%[2] , and in the Chinese medicine diagnosis of PD constipation, the proportion of qi deficiency is 69.11%[3] . Patients with PD constipation show more severe motor symptoms than those without PD alone, and the progression of motor symptoms is accelerated if constipation symptoms appear before motor symptoms [4] . Constipation will affect the absorption of drugs for Parkinson's disease, and even cause intestinal complications such as intestinal obstruction and intestinal perforation [5] , which not only affects the quality of life of the patients [6] , but also brings great psychological pressure and economic burden to the patients. Therefore, it is urgent to explore green therapies for treating constipation symptoms in patients with Parkinson's disease. At present, the clinical treatment of PD constipation (qi deficiency type) is based on laxatives and pro-intestinal dynamics drugs, and the long-term use of which can damage the intestinal internal environment [7] , leading to intractable constipation [8] , and even inducing precancerous lesions - colonic melanosis [9] . Stone acupuncture and moxibustion gua sha is the traditional stone improved into stone canisters, in the canisters have fixed moxa device, ignition of moxa can make the stone canisters heat, the role of the elderly PD patients skin related acupoints, with the dissipation of blood stasis, qi, through the bowels of the bowels and defecation of the effect of [10] , the operation of the simple, non-invasive, high patient compliance [11] . Therefore, the aim of this study is to use acupuncture stone warm moxibustion and gua sha to treat patients with Parkinson's disease with qi deficiency and constipation, and to explore its efficacy and the effect on quality of life.

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2. Objects and Methods

2.1. Objects of study

PD patients who attended the first and second wards of the Department of Encephalopathy of Xi'an Hospital of Traditional Chinese Medicine from February 2022 to February 2023 were selected. (1) Inclusion criteria: ① Age 18～ 75 years old hospitalized patients; ② Parkinson's disease in accordance with the "China Parkinson's disease diagnostic criteria (2016 version)" [12] ; ③ constipation diagnostic criteria in accordance with the "China Chronic Constipation Diagnostic and Treatment Guidelines" [13] ; ④ qi deficiency constipation Chinese medicine diagnostic and typing standards in accordance with the "constipation Chinese medicine diagnosis and treatment expert consensus opinion" [14] ; ⑤ voluntary participation and informed consent. (2) Exclusion criteria: ① people with serious diseases such as heart, brain, liver, kidney, etc.; ② people with constipation caused by other factors such as nerve injury, intestinal obstruction or diabetes; ③ people with skin infection or breakage at the site of warm moxibustion and gua sha; ④ people who are in menstruation or pregnancy; ⑤ people with history of asthma or history of allergic reaction to moxa; ⑥ people with poor adherence, obvious cognitive impairment, and unable to cooperate with the completion of this study. (3) Termination criteria: those who had adverse reactions during the study; those who took laxative drugs by themselves during the trial period; patients who did not have a bowel movement for greater than or equal to 3 days since the start of the acupuncture and moxibustion gua sha treatment. (4) Grouping method: using SPSS26.0 statistical software according to the ratio of 1:1 randomly divided into 2 groups, random numbers into opaque envelopes, the inclusion of research subjects in accordance with the time of diagnosis of constipation in order to open the envelope, you can get the grouping number, the study was included in a total of 80 cases of research subjects, divided into the control group and the experimental group, each of which is 40 cases. The data analysis and efficacy evaluation personnel at the end of the intervention were blinded to ensure the quality of the study. The differences between the two groups in terms of gender, age, duration of disease, whether the activity was limited, whether the defecation environment was hidden or not, and Hoehn-Yahr staging (H-Y staging) at the time of enrollment were not statistically significant (P> 0.05), and were comparable. For details, see Table 1.This study was reviewed and approved by the Ethics Committee of Xi'an Hospital of Traditional Chinese Medicine.

2.2. Methodology

2.2.1. Patients in both the control and experimental groups were given routine care for constipation

1) Maintain a good diet: drink plenty of water and increase your intake of laxative foods, such as: grains, celery, fungus, citrus fruits, and yogurt;

2) Maintain good defecation habits: 5:00am to 7:00am is the time of the hand yangming large intestine meridian [15] , you should get up and drink a glass of water to wake up the intestinal tract, rub the abdomen, or try to defecate after a meal, pay attention to the hidden environment of the defecation, concentrate on the defecation, and do not read books;

3) Keep exercising: according to the condition, one hour after meals, choose activities suitable for you, such as walking, Ba Duan Jin, tai chi, etc., to increase the ability of gastrointestinal peristalsis, and exercise at least 4 days a week;

4) Abdominal massage: the nurse instructs the patient or family members to massage along the patient's intestinal tract alignment in a clockwise circular motion 2～ 3 times a day;

5) Psychological guidance: long-term PD constipation patients will inevitably appear anxiety, depression and other negative emotions [16] , should be timely assessment of the patient's psychological state to give effective psychological support, correctly guide patients, and actively cooperate with the treatment.

2.2.2. Control group

Patients were given Ma Ren soft capsule according to the instructions (Tianjin Central Pharmaceutical), 2 capsules once a day; 2 capsules 3 times a day in case of emergency, for 14 consecutive days.

2.2.3. Test group

On the basis of routine care, give acupuncture stone warm moxibustion scraping treatment, using

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the acupuncture stone moxibustion canister produced by the Heze Development Zone Acupuncture Source Medical Instrument Co. Ltd. (Lu He Measures No. 20170038), the edge of the mouth of the canister is used to scrape, the material is natural Surabaya acupuncture stone, 8.7 cm high, 7 cm wide, the inner caliber is 5.8 cm, and the bottom of the center of the canister is connected to a spiral needle of 3 cm high, which can be Place the length of 2.5 cm moxa pillars. Before each use, you need to light the moxa column 5 minutes in advance, the stone canister preheating (about 40 ℃), the heat to the patient's comfort is appropriate, scraping and moxibustion at the same time, do not force gua sha. Before scraping, close the door and windows, patients lying on their backs in the hospital bed, first with warm water gauze wipe scraping parts, to be dry after the scraping essential oil (medium) coated in the skin corresponding points, follow the principle of the first upper limb after the lower limb, with stone acupuncture moxibustion canister in turn scraping both sides of the branch groove → both sides of the center of the sky → both sides of the water channel → both sides of the return to the left side of the outside of the water channel → left outside of the return to the left side of the two sides of the foot Sanli → both sides of the on the huge virtual → two sides of the Zhaohai acupuncture points, each acupuncture point in one way! Scraping 40～ 50 times, the whole process about 20 minutes, once a day, 14 consecutive days of intervention. Considering the ethical issues, if the patients in both groups did not defecate for three consecutive days, laxatives or enemas were used to relieve the patients' pain as prescribed by the doctor.

2.3. Evaluation indicators

2.3.1. Scale scores

The following scales were used to evaluate constipation before treatment and after two weeks of treatment, respectively:

(1) Bristol Stool Feces Scale (BSFS) was developed by Heaton et al. and Lewis et al.[17] . It is divided into seven categories according to the characteristics of stools: Grade I is granular; Grade II is hard lumpy; Grade III is salami with dry and cracked surfaces; Grade IV is soft and sausage-like; Grade V is soft and lumpy; Grade VI is pasty; and Grade VII is watery stools, of which Types I-III are constipation, and Types IV and V are normal, and Types VI and VII are diarrhea. Type I to III are constipation, IV and V are normal, and VI and VII are diarrhea. Grades I to VII corresponded to 1～ 7 points. The Cronbach′s α coefficient of the scale was 0.892, with good reliability and validity.

(2) Chronic Constipation Severity Scale (CSS) This scale [18] is used to assess the severity of constipation in patients, there are 8 entries with a total of 30 points, the higher the score, the worse the constipation. This scale uses physiological indicators to determine the degree of constipation and has good scientific validity [19] .

(3) Constipation Patient Quality of Life Scale (PAC-QOL) This scale [20] reflects the degree of impact of constipation on the patient's daily life in the last two weeks, with a total of 28 entries, and the scoring range of the entries is 0～ 4 points, and the higher the score, the worse the quality of life of the patient with constipation.

2.3.2. Evaluation of efficacy

Refer to the "Diagnostic and Therapeutic Efficacy Criteria of Chinese Medicine" [21] to determine the therapeutic efficacy. Cure: moist stool, normal stool, disappearance of symptoms associated with constipation. ② Effective: the stool quality is dry, constipation with symptoms improve, defecate once in 2 days. ③Effective: the stool is dry before and soft after, the symptoms associated with defecation improve, defecate once within 3 days. Ineffective: no improvement in symptoms. Total effective rate = (number of cured cases+ number of effective cases+ number of effective cases) / total number of cases ×100%.

2.4. Statistical methods

SPSS 26.0 was used to analyze the data. Measurement information that met normality and variance chi-squared was described as mean ± standard deviation ($\bar{x} \pm s$), and t-test was used for intergroup comparisons, and paired t-test was used for before-and-after comparisons within the group; measurement information that did not meet normality was expressed as median, interquartile spacing [$M(P_{25}, P_{75})$], and Mann-Whitney U test was used for intergroup comparisons, and Mann-Whitney U test was used for before-and-after comparisons within the group. Wilcoxon rank-sum test; count data

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were expressed as frequency and percentage (%), and the chi-square test was used. Differences were considered statistically significant at $P< 0.05$.

3. Results

1) Comparison of general information of patients in two groups Comparison of age, gender, duration of constipation, and H-Y grading of patients in two groups, the difference was not statistically significant ($P> 0.05$). See Table 1.

Table 1 :Comparison of general information of the two groups of patients ($\bar{x} \pm s$)

sports event	categorization	Control group (N=40)	Pilot group (N=40)	t/χ^2	*P*
Age (years)		61.53± 6.82	62.50± 6.10	-0.674	0.503
Gender (cases)	male	23	22	0.051	0.822
	daughter	17	18		
Duration of constipation (years)		3.08± 1.32	3.20± 1.38	-0.413	0.680
H-Y (example)	1-1.5	11	17	2.300	0.317
	2-3	25	21		
	4-5	4	2		

2) Comparison of Bristol Stool Trait Scale scores between the two groups After the intervention, the Bristol Stool Trait Scale scores of the patients in the experimental group were better than those of the control group ($P < 0.05$), see Table 2.

Table 2:Comparison of BSFS scores between the two groups of patients before and after treatment [M (P_{25}, P_{75})].

groups	number of examples	pre-treatment	post-treatment	***z***	***P***
control subjects	40	2 (1,2)	3 (3,4)	-5.303	<0.001
test group	40	1 (1,2)	4 (3,4)	-5.517	<0.001
z		-1.453	-2.815		
P		0.146	0.005		

3) Comparison of constipation severity scores between the two groups After the intervention, the constipation severity scale scores of patients in the experimental group were significantly lower than those of the control group ($P < 0.05$), see Table 3.

Table 3:Comparison of CSS scores before and after treatment between the two groups ($\bar{x} \pm s$)

groups	number of examples	pre-treatment	post-treatment	***t***	***P***
control subjects	40	16.68±2.14	10.93±2.53	12.746	<0.001
test group	40	16.65±3.20	8.43±3.92	13.524	<0.001
t		0.041	3.39		
P		0.967	0.001		

4) Comparison of quality of life scores between the two groups After the intervention, the quality of life scale scores of patients with constipation in the experimental group were significantly lower than those in the control group ($P < 0.001$), see Table 4.

Table 4:Comparison of PAC-QOL scores before and after treatment between the two groups ($\bar{x} \pm s$)

groups	number of examples	pre-treatment	post-treatment	***t***	***P***
control subjects	40	53.28±6.58	35.75±9.49	13.86	<0.001
test group	40	55.03±14.02	26.35±12.68	7.394	<0.001
t		-0.715	3.753		
P		0.477	<0.001		

5) Comparison of the overall efficacy of patients in the two groups After the intervention, the efficacy of patients in the experimental group in improving constipation was significantly better than

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that of the control group (P < 0.05), see Table 5.

Table 5:Comparison of clinical efficacy before and after treatment between the two groups of patients

groups	number of examples	heal and recover completely	produce an effect	efficiently	null	Efficiency (%)	*Z*	*P*
control subjects	40	2	11	20	7	33 (82.5)	-2.381	0.017
test group	40	3	15	20	2	38 (95)		

4. Discussion

Parkinson's disease constipation belongs to the Chinese medicine "trembling evidence", "constipation" category [22] , PD constipation occurs more often in the elderly [23] , because of its own associated with the underlying disease, so most of the evidence of qi deficiency. PD patients to reduce the movement of the colon to reduce the tension of the colon movement, coupled with the long-term use of levodopa and other drugs to hurt the qi, resulting in frequent occurrence of constipation. In addition, the long-term use of levodopa and other drugs that injure qi, resulting in frequent constipation. In this study, the use of stone acupuncture moxibustion gua sha sha therapy scraping the skin on the surface of the body related acupoints, to play a line of qi through the collaterals, regulating gastrointestinal peristalsis effect; moxibustion in order to stimulate the meridian acupuncture points, support the positive to dispel evil, and then use the warmth of moxa ignition to promote blood flow, smooth qi, through the internal organs of the abdominal in order to improve the symptoms of constipation in patients with PD [10] .

4.1. Acupuncture warm moxibustion and gua sha therapy can relieve constipation symptoms in constipated patients with Parkinson's disease

The results of this study showed that the CSS scores of the patients in the intervention group were significantly lower compared to the control group, and the BSFS scores indicated that the patients' stool properties were basically normalized (type IV and V), and the difference was statistically significant (P< 0.05). This is similar to the findings of Dana Zhao et al. [24] . In this study, we refer to the data mining of commonly used acupoints for the treatment of constipation [25] , and select the Zhigou, Tianshu, Shui Dao, Guilai, Zhousanli, Shangjiuxu, and Zhaohai acupoints as the Gua Sha acupoints. Gua sha stimulation of tianshu can elevate serum excitatory transmitter levels, decrease vasoactive intestinal peptide levels, regulate the brain-gut axis, and improve constipation [8] . Shuidao and Guilai are located in the abdomen and are the main points of incontinence, also belonging to the proximal treatment selection points. Zhigou is the point of the Sanjiao meridian of the hand Shaoyang, the most good at regulating the Sanjiao qi, dredging the Sanjiao, so that the meridian qi is declared to be upwardly guided and downwardly guided, dredged and drained with regularity, and it is an experienced point for passing stools. Acupuncture Zhigou can shorten the transmission time of the colon in patients with constipation and regulate the motor function of the colon [26] . Foot Sanli is a lower conjunction point of the stomach, which strengthens the spleen and harmonizes the stomach, and regulates the qi of the middle jiao [27] . Shang Ju Xu is a "large intestine lower merging point", combining with Nei Fu, and is the basic acupoint for the treatment of diseases of the large intestine and viscera [28] . Zhaohai is an acupoint of the foot-shaoyin kidney meridian, which is the meeting point of the eight veins and is connected to the Yin-Shiliao vein. Stimulating Zhaohai can replenish the water of the kidney meridian and increase the flow of fluid in order to regulate the bowel movement.([29]) . The Yellow Emperor's Classic of Internal Medicine [30] mentions that acupuncture, needling, moxibustion, medicine and pressing are the five major therapeutic techniques in Chinese medicine, and the material of the acupuncture jar is Surabaya stone, which has a special microcrystalline structure, far-infrared rays that can be carried out through the meridians, and friction against the human body can produce ultrasonic waves that are beneficial to the body, making it effective in transmitting heat and in physical therapy [31, 32] . The moxa pillars used in moxibustion contain dried Artemisia annua, which can warm the meridians and regulate qi and blood when fully burned [33] . In this study, the patients' lifestyles were adjusted, emphasizing regular defecation, drinking plenty of water, and eating a high-fiber diet to soften feces. At the same time, the stone and moxibustion will be used together, through scraping gua sha to scrape the above acupoints, to stimulate the whole body meridian qi, dredge and adjust the large

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intestine viscera qi, to restore the division of the large intestine conduction, to reduce the feces in the intestines to stay in the time, the patient's constipation severity decreased significantly, and the shape of the feces was changed from hard to soft and tended to be normal.

4.2. Acupuncture warm moxibustion and gua sha therapy can improve the quality of life of patients with constipation in Parkinson's disease

The results of this study showed that the PAC-QOL scores of patients in the intervention group were significantly reduced after treatment compared with the control group, and the difference was statistically significant ($P< 0.05$), which was similar to the results of the study conducted by Zou Xiumei et al. [11] . Studies have shown that PD constipation seriously affects the quality of patients' survival, often accompanied by complications such as tension and anxiety, and aggravates the progression of Parkinson's disease [34] . Through the acupuncture stone warm moxibustion gua sha treatment, the patients' constipation symptoms such as abdominal distension and body weight were effectively relieved, and the number and frequency of defecation were basically stable, especially some of the patients no longer relied on the hand-assisted defecation or enema and other auxiliary methods, which solved the patient's troubles from the root, maintained the patient's self-esteem, and the quality of life was steadily improved. Meanwhile, during the operation process, through in-depth communication with patients and their families, we corrected their misperceptions about constipation treatment, and helped patients establish regular dietary and defecation habits, as well as a healthy psychological state. The improvement of constipation symptoms makes the patients' psychological state become more positive, while the good mood promotes the patients' confidence in the recovery of the disease and slows down the further development of PD, forming a virtuous circle.

4.3. The efficacy of acupuncture stone warm moxibustion and gua sha therapy for the treatment of constipation in Parkinson's disease for sure

The results of this study showed that the treatment efficiency of the intervention group was 95%, which was greater than that of the control group (82.5%), and the difference was statistically significant ($P< 0.05$). In this study, the patients included were PD qi deficiency type constipation, and qi deficiency leads to weak transmission of the large intestine, obstruction of blood flow, and formation of blood stasis. If the blood stasis is not removed, new blood cannot be generated, resulting in blood deficiency. The blood and fluid are the same source, so the fluid cannot moisten the large intestine downward, and the lack of water in the large intestine leads to constipation and poor defecation. Moxibustion by heat and far-infrared radiation on the acupuncture point receptors and peripheral nerves, by lowering the cortical 5-hydroxytryptamine (5-HT) receptors in order to generate cellular pacing potential to regulate the central nervous system and digestive system function [35, 36] , and moxa leaves aroma of the nature of the run to penetrate the subcutaneous tissues, warming the blood, tonifying the blood and qi, blood circulation and stasis [37, 38] . The ultrasonic waves generated when the stone acts on the human skin can speed up the blood flow rate by 20% [11] , can achieve the elimination of blood stasis and dissipation of knots, dispel blood stasis and generate new effects, gua sha therapy can accelerate the blood circulation of the tissues around the body, combined with warm moxibustion together with the action of the meridians to warm stimulation to promote the operation of the blood, the fluid is sufficient to moisten the intestines, soften the quality of the stools to reduce the abdominal pain, abdominal distension, the bowel movement, to shorten the time of defecation, to shorten the time of treatment, to shorten the time of defecation, to shorten the time of treatment. Shorten the time of defecation, the therapeutic effect is remarkable.

5. Summary

In summary, this study used acupuncture stone moxibustion scraping method, the role of the corresponding meridian points in the human body, and play a smooth internal organs and qi, help the large intestine to conduct the effect of the dregs, to alleviate the symptoms of constipation in patients with Parkinson's disease, and at the same time improve the quality of life of the patients. This method is in line with the concept of "non-invasive medicine" advocated by today's medical profession, simple and easy to implement, green and safe, easy to promote. However, this study did not evaluate the long-term efficacy of acupuncture, moxibustion and gua sha for the treatment of constipation in patients with Parkinson's qi deficiency, and it was only carried out in our hospital, not in patients from other regions. In the future, we will optimize the intervention plan, consider the inclusion of objective observational

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indexes, and increase the follow-up time, so as to explore the long-term efficacy, and to draw more representative conclusions. This will guide clinical practice and provide ideas and reference for the optimization and development of other TCM nursing techniques in the clinic.

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