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Clinical Study

Clinical observation of *Da Huang* (*Rheum Officinale*) application at Shenque (CV 8) for constipation after operation for lumbar vertebral fracture

大黄外敷神阙穴缓解腰椎骨折术后便秘的临床观察

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Abstract

Objective: To observe the effect of *Da Huang* (*Rheum Officinale*) application at Shenque (CV 8) on constipation after operation for lumbar vertebral fracture.

Methods: Seventy-four patients with constipation after operation for lumbar vertebral fracture were divided into an observation group and a control group by the random number table, 37 cases in each group. The two groups both received ordinary treatment (including healthcare guidance, emotional care, diet arrangement, and defecation nursing), while the observation group was additionally given *Da Huang* (*Rheum Officinale*) application at Shenque (CV 8) for 6 h each day. The therapeutic efficacy was evaluated after successive 3-day treatment.

Results: After 3-day treatment, it took significantly less time for the observation group to conduct the first flatulence and defecation than for the control group ($P<0.05$); the therapeutic efficacy of the observation group was significantly higher than that of the control group ($P<0.01$).

Conclusion: *Da Huang* (*Rheum Officinale*) application at Shenque (CV 8) is effective in treating constipation after lumbar vertebral fracture operation, and it's easy-to-operate and well accepted by patients, hence it's proper to promote this method in clinic.

Keywords: *Da Huang* (*Rheum Officinale*); Acupoint Sticking Therapy; Point, Shenque (CV 8); Spinal Fracture; Constipation

【摘要】目的：观察大黄外敷神阙穴对腰椎骨折术后便秘的影响。**方法：**将74例腰椎骨折术后便秘患者采用随机数字表方法分为观察组和对照组，每组37例。两组均予以常规治疗和护理(包括健康指导、情志护理、饮食调理、排便护理等)，观察组在此基础给予大黄外敷神阙穴治疗，每天敷6 h，连续治疗3 d后观察疗效。**结果：**治疗3 d后，观察组患者首次排气及排便时间均短于对照组，两组差异均有统计学意义($P<0.05$)；两组疗效差异具有统计学意义，观察组优于对照组($P<0.01$)。**结论：**大黄外敷神阙穴治疗腰椎骨折术后便秘疗效可靠，操作方便，易于被患者接受，适宜临床推广。

【关键词】大黄；穴位贴敷法；穴，神阙；脊柱骨折；便秘
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Constipation is one of the common complications in orthopedic bedridden patients. After lumbar vertebral operation, abdominal distention and constipation may occur due to anesthesia, analgesia pump, and prolonged bed rest. The occurrence rate of abdominal distention and constipation can be up to 40%-88% after lumbar vertebral fracture[1-2], usually in 12 h after the fracture, may last about 7 d in the acute stage[3-5]. Constipation doesn't only cause discomfort, but also affect intake of food and the recovery, not to mention that the increased abdominal pressure may induce inferior vena cava embolism in severe cases[6]. Therefore, it's become crucial to prevent constipation in the nursing care of patients with lumbar vertebral fracture. From January 2014 to January 2015, we adopted external application with *Da Huang* (*Rheum Officinale*) at Shenque (CV 8) to prevent and treat abdominal distention and constipation in patients after operation for lumbar vertebral fracture. The report is given as follows.

1 Clinical Materials

1.1 Diagnostic criteria

By referring to the diagnostic criteria of constipation in *Criteria of Diagnosis and Therapeutic Effects of Diseases and Syndromes in Traditional Chinese Medicine*[7]: prolonged defecation, one bowel movement in two or more days, with hard and dry

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stools; in severe cases, stools are difficult to pass, or made up of hard pellets, coupled with abdominal distension or pain, fatigue, and poor appetite.

1.2 Inclusion criteria

Conforming to the above diagnostic criteria of constipation; patients after internal fixation for lumbar vertebral fracture with general anesthesia or patients control analgesia (PCA); having singed the informed consent form and willing to participate in the study.

1.3 Exclusion criteria

Severe conditions involving cardiovascular system, lungs, kidneys, nervous system, and hematologic system, and tumors; organic intestinal diseases; communication dysfunction, mental disorders, and those unable to cooperate on treatment or investigation; allergic constitution; umbilical hernia; those who cannot receive external application at umbilicus because of peri-umbilical eczema[8].

1.4 Statistical analysis

The SPSS 17.0 was adopted for data analyses. Measurement data were expressed as mean ± standard deviation ($\bar{x} \pm s$), and between-group comparisons were performed by independent samples *t*-test, comparison of rate was by Chi-square test, and ranking data were analyzed by rank-sum test. $P<0.05$ indicated that the difference was statistically significant.

1.5 Subjects

Totally 74 eligible subjects were patients who received internal fixation for lumbar vertebral fracture under general anesthesia recruited from the Orthopedic Department of our hospital between January 2014 and January 2015. The patients were aged between 28 and 66, averaged at (48.2±10.4) years old; there were 38 females and 36 males. The patients all failed to pass gas in 6 h after the internal fixation for lumbar vertebral fracture, coupled with abdominal distention and discomfort. They were divided into an observation group and a control group by random number table, and according to statistical analyses, there were no significant differences in comparing the baseline data between the two groups ($P>0.05$), indicating the comparability (Table 1).

Table 1. Comparison of the general condition

Group	*n*	Gender (case)		Average age ($\bar{x} \pm s$, year)	Fracture (case)	
		Male	Female		Lumbar bursting fracture	Lumbar compression fracture
Observation	37	14	23	50.5±9.0	22	15
Control	37	12	25	46.0±11.2	21	16

2 Treatment Methods

2.1 Observation group

2.1.1 Ordinary nursing care

Ordinary nursing cares after operation for lumbar vertebral fracture, including life sign monitoring, disease condition observation, guidance for activities in bed, diet instruction, incision care, emotional care, and rehabilitation exercises.

2.1.2 Acupoint sticking

Acupoints: Shenque (CV 8).

Method: *Da Huang* (*Rheum Officinale*) 5-10 g was smeared onto gauze sized of 2 cm × 2 cm when mixed with normal saline, and then externally applied to Shenque (CV 8) and covered by a piece of application sized of 6 cm × 9 cm. The application was retained for 6 h each day, and the treatment was given for successive 3 d. It should be replaced by a new application if it dropped during retaining.

The acupoint application was operated by nurses from our department according to the *Operating Instructions for Nursing Techniques in Traditional Chinese Medicine*[9].

2.2 Control group

The patients in the control group only received the same nursing cares as those applied in the observation group.

3 Observation of Therapeutic Efficacy

3.1 Observation items

The following data were observed and recorded: initial anal flatulence time, initial defecation time, bowel movement during the next 72 h, skin condition around the umbilicus, and abdominal distention after operation.

3.2 Criteria of therapeutic efficacy[10]

Markedly effective: Flatulence or defecation in 24 h after treatment, without abdominal distention.

Effective: Flatulence or defecation in 24-72 h after treatment, with reduced abdominal distention.

Invalid: No flatulence in 72 h after treatment, with obvious abdominal distention.

3.3 Results

3.3.1 Comparison of therapeutic efficacy

After 3 treatments, there was a significant difference in comparing the therapeutic efficacy between the two groups ($P<0.01$), and the observation group was superior to the control group (Table 2).

Table 2. Comparison of therapeutic efficacy (case)

Group	*n*	Markedly effective	Effective	Invalid	Total effective rate (%)
Observation	37	25	10	2	94.6[1)]
Control	37	12	11	14	62.2

Note: Compared with the control group, 1) $P<0.01$

3.3.2 First flatulence and defecation time

After 3 treatments, the observation group took significantly shorter time to have the first flatulence and defecation compared to the control group ($P<0.05$), indicating that it took a shorter time to recover gastrointestinal function in the observation group than in the control group (Table 3).

Table 3. Comparison of the first flatulence and defecation time ($\bar{x}$ ±s, hour)

Group	*n*	First flatulence time	First defecation time
Observation	35	25.26±3.51[1)]	30.26±2.43[1)]
Control	23	30.38±3.29	35.38±5.19

Note: Compared with the control group, 1) $P<0.05$

4 Discussion

Lumbar vertebral fracture is a common orthopedic disease. After fracture, prolonged bed rest and lack of exercises will induce stagnation of qi activities, subsequently leading to dysfunction of the large intestine in transit and decreased peristalsis. Therefore, there occurs abdominal distention and constipation, bringing huge discomfort to patients. Besides, the anesthesia during fracture operation restricts gastrointestinal function, and the post-operation retroperitoneal hematoma also inhibits peristalsis, both leading to abdominal distension and constipation[11]. Traditional Chinese medicine holds that operation can cause deficient qi and blood, blocked meridians, dysfunction of Zang-fu organs, failure of stomach qi to descend, and dysfunction of the large intestine in transit[12].

Da Huang (*Rheum Officinale*) is an important Chinese herb in releasing fire and unblocking stagnation, working to clear heat and relax the bowels, resolve stasis and unblock meridians, and clear heat from blood and toxin. Hence, it's commonly used to treat constipation due to excessive heat, abdominal pain due to stagnation[13]. Its function in relaxing bowels is realized by the active ingredient sennosides, which are resolved into rhein anthrone under the action of intestinal bacterial enzyme, to stimulate intestinal mucosa and promote peristalsis[14]. In traditional Chinese medicine, Shenque (CV 8) is considered as the key position in ascending and descending activities of qi, connected to the Conception, Governor, Thoroughfare, and Belt Vessels, and linked with the five Zang and six Fu organs. Modern medicine reveals that the umbilicus is the last closure place of abdominal wall during the development of embryo, and there distributes rich vessels, nerves, and lymph vessels. Besides, the natural hollow allows the umbilicus to retain medication for a comparatively longer time, and achieve a better absorption and effect[15]. Therefore, external application of *Da Huang* (*Rheum Officinale*) at Shenque (CV 8) can make the medication directly reach to the affected area via meridians and collaterals, functioning to unblock meridians and collaterals, regulate gastrointestinal qi activities, promote peristalsis, and improve gastrointestinal function.

This study has shown that *Da Huang* (*Rheum Officinale*) at Shenque (CV 8) can produce a significant effect in releasing abdominal distention after operation for lumbar vertebral fracture, and its total therapeutic efficacy and effect in promoting pass of gas and defecation were superior to that in the control group. However, the following 6 points still require paying attention. First, due to the high temperature on superficial skin, *Da Huang* (*Rheum Officinale*) is easy to become dry, and under this circumstance, the drug needs replacing immediately. The practitioner should examine the treated skin to see whether the skin becomes red or is damaged. The external application should terminate if there is severe skin rash. During the treatment, the practitioner should always examine the abdominal skin of the patients to prevent stimulation to skin by various factors. Second, the bowel movements of the patients should be observed and recorded (including defecation frequency, shape and nature, and defecation time). Besides, the patients need to stop receiving external application if there is a diarrhea. Third, the intake and output also need recording, for supplementing fluid in time. Fourth, the practitioner should help patients to relieve tension and fright. Fifth, during the treatment, the patients should take foods which are easy to digest and rich of nutrition. Sixth, the practitioner should encourage the patients to do active movements, such as clock-wise abdominal massage, to promote peristalsis and release abdominal distention[16].

In a word, under the guidance of Chinese medicine theories, external application of *Da Huang* (*Rheum Officinale*) at Shenque (CV 8) is an effective and simple method in treating abdominal distention after surgery

for lumbar vertebral fracture, without causing any trauma or adverse effects, and thus it's worth promotion in clinic.

Conflict of Interest

The authors declared that there was no conflict of interest in this article.

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Statement of Informed Consent

Informed consent was obtained from all individual participants included in this study.

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