

# Treatment of poststroke constipation with moxibustion

## A case report

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### Abstract

**Rationale:** Moxibustion, an important therapeutic measure of TCM, can stimulate acupoints to unblock the meridians and collaterals, regulate the function of qi and blood, support health, and expel pathogens. So it could be an effective and safe for the treatment of constipation and improvement of the quality of life in poststroke patients with constipation.

**Patient concerns:** He has a history of constipation, with the defecation of hard, bound stool every 2 to 3 days with the help of glycerin enema.

**Diagnoses:** Constipation for >6 months; Cerebral infarction for 9 months; Type 2 diabetes for 3 years. Hypertension for approximately 1 month.

**Interventions:** From the fifth day after admission, 5 rounds of moxibustion with moxa cones were administered at the bilateral ST25 and CV6 acupoints.

**Outcomes:** The patient successfully defecated within 1 hour. Subsequently, the patient could maintain daily unobstructed defecation with a normal total stool weight and moderate hardness.

**Lessons:** Moxibustion is effective and safe for the treatment of constipation and improvement of the quality of life in post-stroke patients with constipation.

**Abbreviations:** MTL = motilin, PAC-QOL = Patient Assessment of Constipation Quality of Life SF-36: the Medical Outcomes Study 36-Item Short-Form Health Survey, SP = Plasma substance P.

**Keywords:** constipation, moxibustion, poststroke

## 1. Introduction

Constipation, a common symptom among patients with stroke that leads to increased morbidity and mortality, has been reported to be associated with an increased length of hospital stay, poor neurological outcome, and death.<sup>[1]</sup> The incidence of

constipation in stroke patients has been reported to range from 29% to 79%.<sup>[2]</sup> Moreover, patients with poststroke constipation are more likely to experience medical complications such as pneumonia, urinary tract infection, upper gastrointestinal bleeding, and recurrent stroke.<sup>[3]</sup>

The conventional drugs for managing constipation include osmotic laxatives, stimulant laxatives, secretagogues, and serotonin 5-HT receptor agonists; however, side effects such as headache, diarrhea, nausea, and abdominal pain need to be considered with the use of these drugs.<sup>[4]</sup> These side effects may have detrimental psychological and physical effects on poststroke patients. In addition, constipation can recur after medication withdrawal, resulting in drug dependence with long-term use. Traditional Chinese Medicine (TCM) is also widely utilized for constipation treatment. The most frequently used classical formula is Ma-Zi-Ren-Wan, while the most frequently used Chinese patent medicine is Ma-Ren-Ruan-Jiao-Nang. The most frequently used Chinese herb is Da Huang (*Radix Rhizoma Rhei*).<sup>[5]</sup> The utilization of alternative nonpharmacological therapies, including acupuncture, electroacupuncture, and massage, has also been reported.<sup>[6,7]</sup> Although the efficacy and safety of these treatments remain controversial, TCM is reportedly tolerated well by patients with poststroke constipation.<sup>[8]</sup>

To the best of our knowledge, the therapeutic effect of moxibustion in poststroke patients with constipation has not been well investigated. Here, we report the case of a 65-year-old man with poststroke constipation who was successfully treated

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The patient provided written consent for publication of this report.

This study was approved by the ethics committee of the First Affiliated Hospital of Guangzhou University of Chinese Medicine. This article does not contain any data pertaining to the participant's identification. Written informed consent for publishing this case was obtained from the participant.

The authors declare that they have no conflicts of interest. No funding was received for this study.

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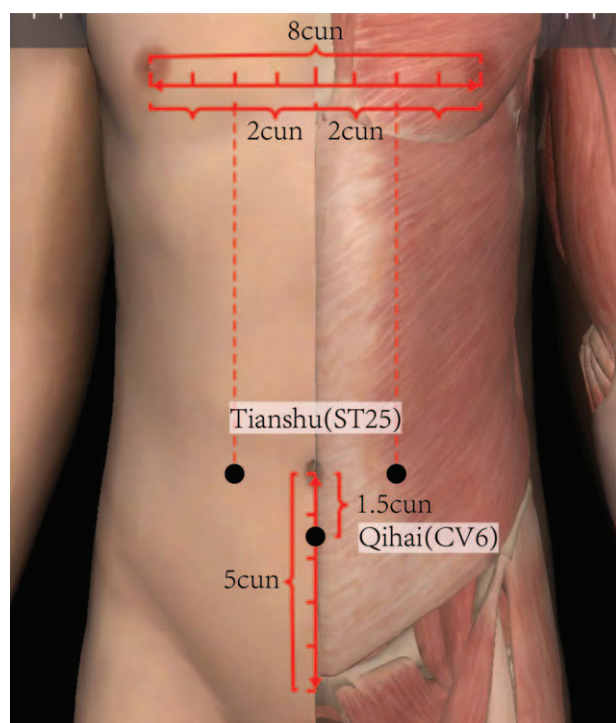
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**Figure 1.** Location of ST25 (*Tianshu*) and CV6 (*Qihai*) acupoints for moxibustion therapy in a 65-year-old man with poststroke constipation.

with moxibustion at the *Tianshu* (ST25) and *Qihai* (CV6) acupoints (Fig. 1) after other treatments proved ineffective.

## 2. Case presentation

A 65-year-old man was hospitalized with a complaint of weakness in the left extremities on November 10, 2017. He reported a history of constipation, with the defecation of hard, bound stool every 2 to 3 days with the help of glycerin enema. This was accompanied by symptoms of abdominal distension, slight abdominal pain, and poor appetite. On admission, his Patient Assessment of Constipation Quality of Life (PAC-QOL) questionnaire score was 88, while his Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) score was 63.9. His medical history included constipation for >6 months; cerebral infarction for 9 months; type 2 diabetes for 3 years, with regular use of metformin to control his blood glucose levels; and hypertension for approximately 1 month, with a maximal blood pressure of 150/90 mm Hg in the absence of medication. The patient reported a negative history of coronary heart disease or other chronic diseases. His examinations included gastroscopy after admission, which revealed chronic superficial gastritis. His basic treatment included mecobalamin tablets (500 µg) to nourish the nerves, clopidogrel hydrogen sulfate tablets (75 mg) to reduce platelet aggregation, atorvastatin calcium tablets (20 mg) to regulate the blood lipid levels, omeprazole magnesium enteric-coated tablets (20 mg) to suppress gastric acid and protect the stomach, and metformin hydrochloride tablets (0.5 g) and acarbose tablets (50 mg) to reduce the blood glucose levels.

To resolve the constipation, during the initial 4 days after admission, the following laxatives were administered: lactulose, glycerine enema (20 mL), Congrong laxative oral liquid (10 mL), Maren Soft Capsule, Chinese rhubarb, and mirabilite. However,

none of these was effective. From the fifth day after admission, 5 rounds of moxibustion with moxa cones (ingredient, *Folium Artemisiae Argyi*; country of origin, QiChun Hubei province, China; model, QZGQAR; manufacturer, Qichun Li-Shizhen Authentic Chinese Herbal Medicines Co Ltd) were administered at the bilateral ST25 and CV6 acupoints (Fig. 1). The patient successfully defecated within 1 hour. Subsequently, the patient could maintain daily unobstructed defecation with a normal total stool weight and moderate hardness. Normal daily defecation was maintained after laxative treatment was adjourned. When the patient was discharged, his PAC-QOL score was 60 and his SF-36 score was 94.9 (Table 1). He was followed-up for 2 months after discharge and underwent the moxibustion procedure once a week at our clinic. During the follow-up period, he maintained unobstructed defecation 1–2 times daily and did not require any other laxative drugs.

The moxibustion procedure is as follows. First, the cone is prepared by twisting the moxa into a globular shape, approximately 1 cm in size, followed by reshaping with both hands to create a cone with a base diameter of 80 mm and a height of 100 mm. The cone should have a smooth surface with a flat base and a tip at the top (Fig. 2A). The acupoint ST25 is located 2 cun adjacent to the midpoint of the navel, while CV6 is located 1.5 cun below the navel (Table 2). Then, the moxa cone is placed on the acupoint, and the top is ignited with a lighter or burning incense. The cone burns from the top down, and it is rapidly and smoothly removed with tweezers when two-thirds of it is burnt or the patient experiences slight pain with a burning sensation. Then, the cone is replaced with a new one, which is ignited. When the moxa cone burns from the top down, patients will experience the following sensations: tepid (for 5 seconds), warm (for 15 seconds), hot (comfortable, for 10 seconds), slight pain (endurable, for approximately 3 seconds; prepare to remove the moxa cone at this point), and burning (for 2 seconds; pain threshold is reached, remove the moxa cone at this point; Fig. 2B, C). After the cone is removed and extinguished, it is safely discarded in a cup filled up to a third with water (Fig. 3A, B). After moxibustion, the skin around the acupoints is flush with slight dermohemia, although no blisters are formed. The quantity of moxibustion depends on the patient's specific condition. Five rounds for each acupoint are considered standard (Fig. 3C).

## 3. Discussion

Moxibustion can stimulate acupoints to unblock the meridians and collaterals, regulate the function of qi and blood, support health, and expel pathogens.<sup>[9]</sup> When the moxa cones are applied to certain acupoints, the intestines can be triggered by the thermal stimulation.<sup>[10]</sup> After moxibustion treatment, the SF-36 and PAC-QOL scores for our patients were considerably improved. Thus, moxibustion not only exerts a therapeutic effect on constipation but also improves the quality of life in poststroke patients. In our case, the patient was treated with lactulose, glycerin enema, Chinese patent medicine, a traditional Chinese herbal formula, traditional Chinese medicine, and external therapeutic measures such as acupuncture, but these treatments were not effective. On the fifth day of hospitalization, moxibustion was performed at the bilateral ST25 and CV6 acupoints in an attempt to improve the constipation. An hour after the first treatment session, the patient, who used to defecate once every 2 to 3 days, defecated spontaneously. During the subsequent hospitalization period, we continued moxibustion treatment in the absence of other interventions and with the

**Table 1****Timeline of intervention with moxibustion therapy for a 65-year-old man with poststroke constipation.**

<b>Medical history: constipation for &gt;6 mo; cerebral infarction for 9 mo; type 2 diabetes for 3 y</b>			
Admission of patient	10/11/2017	14/11/2017	24/11/2017
Basic medications			
Mecobalamin tablets	500 µg	500 µg	500 µg
Clopidogrel hydrogen sulfate tablets	75 mg	75 mg	75 mg
Atorvastatin calcium tablets	20 mg	20 mg	20 mg
Omeprazole magnesium enteric-coated tablets	20 mg	20 mg	20 mg
Metformin hydrochloride tablets	0.5 g	0.5 g	0.5 g
Acarbose tablets	50 mg	50 mg	50 mg
Therapy for poststroke constipation			
Lactulose	Yes	—	—
Glycerin enema	20 mL	—	—
Congrong laxative oral liquid	10 mL	—	—
Maren Soft Capsule	0.6 g	—	—
Chinese rhubarb and mirabilite	rhubarb 10g, mirabilite 10 g	—	—
Moxibustion with moxa cone at the bilateral <i>Tianshu</i> (ST25) and <i>Qihai</i> (CV6) acupoints	—	Five rounds of moxibustion with moxa cones daily	Five rounds of moxibustion with moxa cones daily
Symptom			
Defecation	—	Yes	Yes
Scale score			
PAC-QOL score	88	—	60
SF-36 score	63.9	—	94.9

PAC-QOL score reflects the effects of constipation on the quality of life in the past 2 weeks. A higher score indicates worse constipation.

SF-36 is a well-validated tool and measures 8 domains that can be summarized as a physical and mental health component score. A score change of >5 points for any of the 8 domains is clinically significant. A higher score indicates a better quality of life.

“—” means not used or not recorded.



**Figure 2.** Description of moxibustion therapy for a 65-year-old man with poststroke constipation. A, Preparation of the moxa cone. The cone should have a smooth surface with a flat base and a tip at the top. B, The top of the moxa cone is ignited with a lighter or burning incense stick. C, The moxa cone burns from the top down. When the moxa cone burns from the top down, patients will experience the following sensations: tepid (for 5 s), warm (for 15 s), hot (comfortable, for 10 s), slight pain (endurable, for approximately 3 s; prepare to remove the moxa cone at this point), and burning (for 2 s; pain threshold is reached, remove the moxa cone at this point).

patient's consent. At the end of hospitalization, the patient could spontaneously defecate once a day.

The efficacy of acupuncture combined with moxibustion treatment,<sup>[11]</sup> as well as acupuncture-only treatment,<sup>[12]</sup> has been reported; however, moxibustion-only treatment for constipation in poststroke patients was not reported until 2017. To the best of our knowledge, this is the first report demonstrating the safety and efficacy of moxibustion, which is widely used in China, for patients with poststroke constipation.

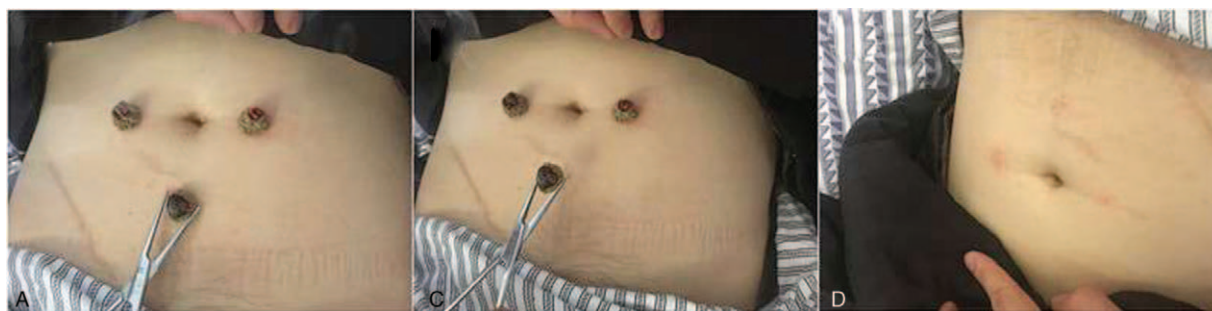
The main physiopathological mechanism underlying the constipation experienced by this patient was insufficient bowel motility.<sup>[13]</sup> According to previous studies, the possible functional mechanisms of moxibustion for improving constipation are as follows. The first one involves plasma substance P (SP), an excitatory gastrointestinal hormone that can contract the

gastrointestinal longitudinal muscle and circular muscle, stimulate neuronal depolarization in the gastrointestinal wall, and accelerate gastrointestinal motility.<sup>[14]</sup> One study reported that moxibustion therapy can increase the plasma SP content, which facilitates acceleration of gastrointestinal motility.<sup>[15]</sup> The second one involves motilin (MTL), a single-chain peptide composed of

**Table 2****Acupoints used for moxibustion treatment of poststroke constipation.**

Point name	Location
<i>Tianshu</i> (ST25)	2 cun lateral to the center of the umbilicus
<i>Qihai</i> (CV6)	On the midline of the abdomen, 1.5 cun below the umbilicus





**Figure 3.** Completion of moxibustion therapy for a 65-year-old man with poststroke constipation. A, Preparation to remove the moxa cone. When the patient begins to experience slight pain, prepare to remove the moxa cone. B, Removal of the moxa cone. For safety, discard the removed moxa cone in a cup filled up to a third with water. C, Skin response after moxibustion. After moxibustion, the skin around the acupoints becomes flush and warm, without blister formation.

22 amino acids that plays an important role at the gastrointestinal excitatory motor neurons. It can not only promote motion of the gastrointestinal tract but also improve the contraction force and tension of the gastrointestinal tract, bile duct, and sphincter of Oddi.<sup>[16]</sup> Moreover, it has been reported that the change in the plasma MTL content was associated with the change in the gastrointestinal dynamics in patients with gastrointestinal dynamic disorder.<sup>[17,18]</sup> Therefore, MTL is closely associated with gastrointestinal disturbance. One study also demonstrated that moxibustion therapy can lead to constipation improvement together with a significant increase in the postprandial plasma MTL content, and that the latter mechanism could induce the former.<sup>[19]</sup> The third mechanism involves the enteric nervous system.<sup>[20]</sup> One study reported the favorable therapeutic effects of moxibustion combined with massage in patients with constipation and suggested that this effect may pertain to functional improvements in the enteric nervous system and intestinal blood circulation.<sup>[21]</sup>

ST25 is widely used to stimulate bowel movements.<sup>[22,23]</sup> It is the front-mu point of the large intestine on the basis of TCM meridians, and it can adjust the qi in the large intestine.<sup>[15]</sup> ST25 is also an acupoint at the Stomach Meridian of the Foot-Yangming. According to the TCM theory, the acupoint of the meridian can treat diseases associated with the meridian. After the first moxibustion treatment, our patient's constipation was resolved. He could spontaneously defecate once a day at the end of hospitalization. Prior to treatment, his PAC-QOL score was 88; this improved to 60 after treatment, which finding implies that moxibustion is a good option when other interventions do not show a favourable therapeutic benefit in patients with poststroke constipation.

#### 4. Conclusions

The findings from this case suggest that moxibustion is effective and safe for the treatment of constipation and improvement of the quality of life in poststroke patients with constipation. We expect that future studies will reveal the more definitive therapeutic effects of moxibustion on poststroke constipation. Because of the limitations of single-case clinical observational studies, a large-scale randomized clinical trial with a sufficient follow-up period is required.

##### 4.1. Availability of data and materials

Not applicable.

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