Research Progress on the Application of Acupoint Massage to Post-Stroke Constipation Patients

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Abstract

Stroke is a common neurological emergency, the second leading cause of death worldwide, and the leading cause of mortality and disability among adults in China^1,2, characterized by high incidence, high disability rate, high recurrence rate, high mortality, and high economic burden^3. Constipation is one of the common complications following stroke, with 29%-79%^4 of patients developing constipation after stroke. Prolonged retention of food residues in the intestinal tract due to constipation can produce harmful substances such as hydrogen sulfide and ammonia; absorption of these harmful substances can damage peripheral capillaries and nerve endings, exacerbating the patient' s condition and severely affecting their quality of life. Currently, the number of patients with stroke and constipation has also increased significantly, presenting an objective need for research on post-stroke constipation. This article aims to summarize and organize relevant studies on the application of integrated Chinese and Western medicine nursing care for post-stroke constipation in recent years, in order to provide new ideas and methods for the clinical application of acupoint massage.

Full Text

Preamble

Stroke is a common neurological emergency and the second leading cause of death worldwide, representing the primary cause of mortality and disability among adults in China [1,2]. It is characterized by high incidence, disability, recurrence, and mortality rates, as well as substantial economic burden [3]. Constipation is one of the most frequent complications following stroke, affecting 29% to 79% of patients [4]. The retention of food residues in the intestinal tract leads to the production of harmful substances such as hydrogen sulfide and ammonia, which damage peripheral capillaries and nerve endings upon absorption,

thereby exacerbating the patient' s condition and severely impacting quality of life. With the growing number of stroke survivors and constipation cases, there is an urgent need to address post-stroke constipation. This paper aims to systematically review recent research on integrated Chinese and Western nursing care for post-stroke constipation, providing new insights and methods for the clinical application of meridian massage.

Keywords: meridian massage; stroke; constipation; traditional Chinese medicine nursing

1 Epidemiology of Post-Stroke Constipation

Constipation is a gastrointestinal functional disorder caused by multiple factors. According to the Rome IV diagnostic criteria, it is defined as difficult defecation, incomplete evacuation, or reduced bowel movement frequency, excluding a diagnosis of irritable bowel syndrome (IBS) [5-6]. In China, the prevalence of chronic constipation ranges from 7.0% to 20.3%, increasing with age [7]. As a country with high stroke incidence [8], China reports over 2 million new cases annually [9], creating an enormous healthcare burden. Clinical observations indicate that 30% to 60% of stroke patients develop constipation, a common complication after cerebrovascular accidents, with the incidence reaching 90% among bedridden patients [10]. Patients with post-stroke constipation often experience elevated blood pressure during straining, increasing the risk of recurrent cerebrovascular events that can be life-threatening. Chronic constipation also predisposes patients to psychological disorders such as anxiety and depression, causing significant mental distress for both patients and their families. Post-stroke constipation severely affects prognosis and complicates rehabilitation, necessitating greater attention to its treatment and nursing care alongside stroke management.

2.1 Historical Nomenclature in Traditional Chinese Medicine

In traditional Chinese medicine (TCM), post-stroke constipation falls under the category of constipation disorders. The earliest TCM understanding of constipation originated from descriptions in the *Huangdi Neijing* (Yellow Emperor' s Inner Canon) as "difficult posterior discharge" or "difficult defecation" [11]. The *Shanghan Lun* (Treatise on Cold Damage) documented it as "absence of bowel movement," while the *Jinkui Yaolue* (Synopsis of the Golden Chamber) recorded it as "spleen constraint." Sun Simiao' s *Beiji Qianjin Yaofang* (Essential Formulas Worth a Thousand Gold Pieces) mentioned "difficult defecation" and "obstructed defecation." The term "da bian bi" (constipation) first appeared in Zhu Gong' s *Leizheng Huoren Shu* (Classified Book on Saving Lives) during the Song-Jin-Yuan period. Gong Tingxian' s *Jishi Quanshu* (Complete Book for Saving the World) in the Ming-Qing period first used "da bian bi" (bowel closure) as a disease name. Sun Wenyin wrote in *Dantai Yu' an* (Jade Cases

from the Cinnabar Terrace): "In central organ stroke, there is often stagnation of the nine orifices, manifesting as symptoms including lax lips, aphasia, nasal congestion, deafness, blurred vision, and constipation," marking the first explicit mention of post-stroke constipation. Shen Jin' ao first used the term "bian bi" (constipation) in his work *Zabing Yuanliu Xi Zhu* (Detailed Analysis of Miscellaneous Diseases). During the Republican era, after the publication of *Therapy for Pediatric Constipation* by Dr. Weinbrandt, "constipation" became established as an independent disease name [12].

2.2 Etiology and Pathogenesis in Traditional Chinese Medicine

TCM theory posits that stroke involves either obstruction of cerebral vessels or extravasation of blood outside the vessels, primarily caused by wind, fire, phlegm, stasis, and deficiency leading to yin-yang imbalance [13] and upward disturbance of the clear orifices by rebellious qi and blood. The brain, as the residence of the original spirit, is the disease location in stroke. Brain dysfunction subsequently affects visceral functions, resulting in constipation. While constipation is located in the large intestine, the *Zhubing Yuanhou Lun* (Treatise on the Origins and Symptoms of Diseases) states: "Difficult defecation arises from disharmony of the five viscera, yin-yang imbalance with excess or deficiency, and triple burner dysfunction, leading to combined cold and heat binding." This indicates that constipation, though located in the large intestine, is related to the spleen, stomach, lung, and kidney organs, involving patterns such as spleen-stomach qi deficiency, impaired lung depurative descent, kidney qi deficiency, and liver qi stagnation [14]. Post-stroke constipation is predominantly a condition of root deficiency and branch excess. During the acute phase, excess patterns are more common, arising from phlegm-stasis intermingling or phlegm-turbidity obstruction that transforms into fire over time, causing qi stagnation and impaired bowel qi passage. During the recovery and sequelae phases, mixed deficiency-excess patterns predominate, as prolonged illness leads to deficiency, visceral function decline, and large intestine transmission dysfunction manifesting as deficiency constipation [15]. Wang Qingren in *Yilin Gaicuo* (Corrections of Medical Errors) noted: "After developing hemiplegia, there is insufficient strength to move the legs···how can there be qi to reach the lower body to propel stool? Stool in the large intestine becomes dry over time without movement," recognizing that post-stroke constipation is often a deficiency pattern. Although constipation is located in the large intestine, it is closely related to the lung, spleen, stomach, and kidney. In summary, qi deficiency leads to weak transmission and containment, while yin deficiency causes intestinal dryness and lack of moisture, resulting in insufficient propulsive force for stool passage—the pathogenesis of qi-yin dual deficiency constipation [16].

3 Current Status of Western Medicine Treatment for Post-Stroke Constipation

Current clinical reports indicate various treatment approaches in modern medicine, though most adopt methods for chronic constipation without specific effective medications for post-stroke constipation.

3.1 Physical Therapy

Physical exercise during defecation primarily generates propulsive force through abdominal and pelvic muscle strength. Prolonged bed rest weakens these muscles, making rehabilitation of defecation-related muscle strength a common clinical approach. During bed rest, patients should be encouraged to perform frequent turning movements and simple bed exercises. When ambulation becomes possible, patients should be guided to perform appropriate lumbar flexion and anal lifting exercises, along with supervised walking, which enhances appetite while simultaneously strengthening defecation propulsive force and improving intestinal motility to promote constipation recovery. However, this approach has slow onset and requires long treatment cycles.

3.2 Pharmacological Treatment

Several categories of laxatives are employed: (1) **Hyperosmotic laxatives**: Taken on an empty stomach with ample water, these poorly absorbed drugs create hyperosmotic salt solutions in the intestine that inhibit water absorption, causing intestinal distension that stimulates motility and produces catharsis [17]. (2) **Stimulant laxatives**: These enhance intestinal reflex motility by stimulating water and electrolyte absorption, primarily acting on the large intestine. Components include phenolphthalein, anthraquinones, and bisacodyl. (3) **Bulk-forming laxatives**: Through hydrogen bonding that retains H_2O, these agents expand into colloids after water absorption in the intestine, softening stool while restoring normal fecal volume and mass to promote defecation. (4) **Lubricant laxatives**: These work by coating fecal masses to soften them while lubricating the intestinal wall to facilitate rectal passage. Primary agents include liquid paraffin, glycerin suppositories, and glycerin, with the latter two also providing hyperosmotic stimulation of the intestinal wall to induce defecation reflex while exerting local lubricating effects. (5) **Microbial agents**: Represented by lactobacillus and bifidobacterium, these regulate intestinal flora balance, increase beneficial bacteria, normalize water and electrolyte content, and enhance intestinal motility by improving the intestinal environment [18].

Although Western medications act rapidly, long-term use affects intestinal environment and function. Western treatment primarily relies on purgatives that easily create dependency with prolonged use and interfere with small intestine function. Vitamin deficiency and dehydration are common side effects. Additionally, purgative abuse can cause kidney stones and renal dysfunction, with other potential adverse effects including drug interactions that reduce specific

medication efficacy. Another significant concern is the rebound effect: with frequent laxative use, digestive tract and small intestine functions become stagnant and ineffective, ultimately leading to chronic constipation or even worsening its severity.

3.3 Biofeedback Therapy

This novel therapeutic approach utilizes modern scientific instruments to provide feedback on patients' physiological or pathological information. Through targeted special training, patients can use "mind intention" control and psychological training to restore health and eliminate pathological processes. Instruments include electromyography, electroencephalography, skin conductance, and skin temperature feedback devices [19]. Post-stroke constipation patients primarily use electromyography feedback, with electrodes placed rectally to measure muscle tension or relaxation. The amplified electromyographic information is converted into audio and visual signals, such as music or animations, enabling patients to recognize whether defecation-related muscles are functioning normally or abnormally during training. Patients learn defecation techniques through abdominal breathing to adjust abdominal pressure, achieving anal contraction or relaxation while using animated displays to train coordinated pelvic floor muscle movements [20]. Through progressive treatment, patients learn to control muscle activity during defecation, facilitating functional recovery [21]. However, biofeedback is primarily used for dyssynergic defecation and fecal incontinence, as well as anal spasm, chronic pelvic floor syndrome, absent rectoanal inhibitory reflex, diminished rectal sensation, and functional constipation from solitary rectal ulcer syndrome. The technique is difficult to master, not widely available in many hospitals, and has limited application.

3.4 Enema Therapy

This method involves inserting a catheter through the anus and rectum into the colon to infuse liquid for catharsis and gas evacuation [22]. While it stimulates intestinal motility, softens and expels feces, and dilutes intestinal toxins, frequent enemas disrupt normal intestinal flora and the internal environment, causing constipation and diarrhea. Repeated catheter insertion can damage rectal and intestinal mucosa, leading to infection and even intestinal perforation. Moreover, frequent enema stimulation forces intestinal motility, creating dependency over time. Without enema stimulation, the intestine loses autonomous motility, resulting in loss of normal peristaltic function and inability to defecate normally.

4 Current Status of Traditional Chinese Medicine Treatment for Post-Stroke Constipation

TCM demonstrates advantages in treating stroke recovery, reducing sequelae occurrence [22]. For post-stroke constipation, TCM treatments including moxi-

bustion, acupoint application, and herbal enema have achieved favorable efficacy without adverse reactions or dependency.

4.1 Herbal Medicine Treatment

Chinese herbal medicine plays a unique role in treating post-stroke constipation. Internal herbal treatment approaches vary according to etiology, focusing on vigorous purgation of heat binding, heat-clearing and stagnation-guiding; or qi-supplementing and intestine-moistening, blood-nourishing and dryness-moistening, and qi-regulating bowel-moving methods. Luo Li [23] treated 56 patients with Xinglou Chengqi Decoction for bowel-purging and heat-clearing, achieving clinical cure in 48 cases with favorable outcomes. Yang Ke [24] and Sha Mingjie et al. proposed that post-stroke constipation primarily results from blood stasis obstructing the intestines after stroke, treating with qi-supplementing and blood-activating decoctions containing peach kernel, wine-processed rhubarb, white peony, astragalus, and angelica to activate blood, remove stagnation, and promote defecation. Patients showed significant improvement in anal obstruction sensation and defecation speed. Although herbal internal treatment has achieved good efficacy, virtually no large-scale, double-blind, placebo-controlled clinical trials have been reported, and long-term maintenance effects require further clinical observation.

4.2 Conventional Body Acupuncture

Acupuncture effectively treats post-stroke constipation by dredging and regulating meridian qi-blood and balancing visceral yin-yang, exerting excellent bidirectional regulation of intestinal function. Conventional body acupuncture offers unique advantages including simultaneous root and branch treatment, holistic regulation, rapid onset, good long-term efficacy, and minimal side effects. Wu Qingming [25] et al. used acupuncture at Tianshu (ST25), Qihai (CV6), Zhigou (TE6), and Zusanli (ST36), demonstrating significantly accelerated defecation speed post-treatment, confirming the qi-regulating and bowel-opening effects of this acupoint prescription. Zeng Qunxin employed phlegm-transforming and bowel-purging acupuncture methods to not only promote fecal expulsion but also improve cerebrovascular pressure, relieve cerebral edema, and facilitate elimination of toxic substances from stroke. Ma Zhehe [26] and Lin Guanghua used rapid needling at Ciliao (BL32), swiftly withdrawing the needle without retention when strong qi sensation was obtained. Results showed significantly shortened intervals between bowel movements with immediate effects upon needle withdrawal. However, patient acceptance of acupuncture alone for post-stroke constipation is low, with unclear long-term effects and difficulty maintaining continuous application.

4.3 Acupoint Catgut Embedding Therapy

This technique uses specialized needles to implant absorbable catgut or other sutures into specific acupoints, generating stimulation through both the needle

and suture material to dredge meridians, balance yin-yang, harmonize qi-blood, and regulate viscera. Zou Zhihong [27] et al. treated 50 post-stroke constipation patients with abdominal acupoint embedding at Tianshu (ST25) and Daheng (SP15), achieving effectiveness in 48 cases (96% total effective rate) after four weeks. Wu Wenfeng [28] et al. applied embedding at Dachangshu (BL25), Tianshu (ST25), and Shangjuxu (ST37) in 30 patients, showing significantly reduced stool hardness and alleviated constipation symptoms on RK scale evaluation. Guo Jinying [29] divided 70 patients into a "Jin' s three-needle" embedding plus Xinjia Huanglong Decoction group and a control group (35 cases each), with the treatment group showing superior efficacy. This study used Jin Rui' s 独创 "intestinal three-needle" technique. Acupoint embedding stimulation can last three weeks or longer, compensating for the short duration of conventional acupuncture effects. This therapy suits patients unable to tolerate daily acupuncture. However, as catgut is a protein that triggers immune responses and increases lymphokines, local inflammatory manifestations including redness, swelling, heat, and pain may occur, requiring cautious application in allergic individuals.

4.4 Electroacupuncture Treatment

Electroacupuncture applies pulsed electrical current through already-manipulated filiform needles to prevent and treat disease. Peng Yongjun [30] et al. performed deep perpendicular needling (approximately 50mm) at bilateral Tianshu (ST25) points, penetrating the peritoneum without further manipulation, then applied electroacupuncture with sparse-dense wave to enhance local stimulation of large intestine motility. Results showed 95% of 28 post-stroke constipation patients achieved improved defecation. Yang Wenxiang [31] et al. also obtained satisfactory results with electroacupuncture at Tianshu, possibly related to enhanced enteric nerve fiber conduction and accelerated intestinal motility. Timely electroacupuncture intervention during acute cerebral infarction can prevent post-stroke constipation. However, first-time users are prone to needle fainting, and electroacupuncture stimulation may cause adverse reactions including intestinal perforation and abdominal muscle spasm, with potential side effects of nerve and vascular injury, tissue adhesion, organ damage, needle breakage, and cardiac disease induction.

4.5 Clinical Research on Meridian Massage for Post-Stroke Constipation

The human meridian system integrates viscera and extremities into a unified whole, functioning through meridian qi activity to connect, communicate, circulate qi-blood, nourish the body, and protect against external pathogens. Meridian massage demonstrates excellent clinical efficacy for intervening in qi-deficiency type constipation after stroke [32]. Abdominal massage harmonizes qi-blood, regulates the qi mechanism pivot, enhances gastrointestinal motility, and provides strong propulsive force for fecal masses in the intes-

tine. It also promotes rapid digestive juice secretion and provides adequate intestinal moisture to facilitate stool expulsion. Fang Xiao et al. [33] used abdominal massage combined with glycerin suppositories for constipation, with the treatment group achieving 90.00% total effective rate versus 46.67% in the control group receiving only suppositories. Li Xiaoxia [34] treated 100 functional constipation patients by dividing them into treatment and control groups (50 cases each). The treatment group received honey enema combined with meridian massage at Hegu (LI4), Zusanli (ST36), Shangjuxu (ST37), Zhongwan (CV12), Shenque (CV8), Tianshu (ST25), Zhigou (TE6), Shuidao (ST28), Guilai (ST29), Fenglong (ST40), and Changqiang (GV1), while the control group received 40 mL glycerin suppository. After four weeks, the treatment group showed 94.00% total effective rate versus 78.00% in the control group, with significant differences in symptom improvement and colonic transit time, demonstrating that enema combined with meridian massage is safe and superior to suppository alone. Zhong Wen [35] et al. applied routine nursing plus meridian massage using "meridian kneading" technique along the Hand Yangming Large Intestine and Hand Taiyin Lung Meridians, with acupressure at Quchi (LI11), Hegu (LI4), Chize (LU5), and Shaoshang (LU11) for three minutes, followed by "finger pushing" along the meridian pathways three times each. Results showed the meridian massage group achieved 96.36% total effective rate for constipation improvement, significantly superior to the 85.45% in the control group [36]. Most stroke recovery patients with constipation suffer from senile functional constipation, and high-frequency acupoint meridian massage can effectively improve clinical response rates. Meridian acupressure covers a larger area than isolated acupoint massage, yielding higher clinical efficacy.

As population aging accelerates in China, stroke incidence continues to rise, accompanied by increasing post-stroke constipation rates that severely reduce quality of life, limit social activities, slow rehabilitation, prolong hospitalization, and create heavy burdens for families and society, making prevention and treatment imperative [37]. Current Western conventional treatments lack clear standards, yield suboptimal clinical efficacy, and have limited medication options. Chinese medicine offers unique advantages, with TCM nursing external therapies reducing constipation occurrence and progression. However, literature review reveals no consensus on management strategies, with treatments primarily based on clinical experience and insufficient case numbers. Future research requires large-scale, multicenter, high-quality randomized controlled trials and strengthened basic research to establish standardized treatment protocols, providing solid theoretical guidance for TCM external treatments to better serve clinical practice, alleviate patient suffering, and improve survival quality.

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Note: Figure translations are in progress. See original paper for figures.