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A Review of Acupuncture Treatment for Post-Stroke Hiccup

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Abstract: ***Post-stroke hiccup (PSH) is a common complication following stroke, caused by paroxysmal spasm of the diaphragm. Persistent episodes can lead to nutritional intake disorders, electrolyte imbalances, and may even exacerbate brain injury. Acupuncture therapy offers advantages of rapid onset and high safety in treating PSH by regulating central nervous system excitability and inhibiting diaphragmatic spasm. This study reviewed literature from databases including CNKI, Wanfang, and PubMed from 2015 to 2025, identifying nine frequently used acupuncture therapies (such as conventional body acupuncture, electroacupuncture, eye acupuncture, etc.). The core mechanism is considered to be calming the ascending counterflow, harmonizing the stomach, and regulating qi movement, demonstrating significant efficacy in improving patients' quality of life.***

Keywords: Stroke, Hiccup, Acupuncture Therapy, Review.

1. Introduction

As a common complication of cerebrovascular accidents, post-stroke hiccup (PSH) is essentially paroxysmal diaphragmatic spasm caused by damage to the medullary respiratory center or vagal nuclei, leading to pathological activation of the hiccup reflex arc (vagus nerve-phrenic nerve pathway) [1]. Modern medical research indicates that its incidence ranges from 3.5% to 18%, with a significantly higher risk in patients with brainstem infarction (especially lateral medullary syndrome) [2]. Persistent episodes can result in a sharp increase in energy consumption (oxygen consumption per hiccup is approximately three times that of normal breathing), nutritional intake disorders, a 27% increase in the incidence of aspiration pneumonia, and may exacerbate intracranial pressure fluctuations due to sudden changes in abdominal pressure, thereby affecting cerebral perfusion [3].

In traditional Chinese medicine (TCM), PSH falls into the category of "hiccup disorder" [4]. The core pathogenesis is failure of stomach qi to descend and rebellious qi affecting the diaphragm, closely related to the post-stroke condition where wind, fire, phlegm, and blood stasis disturb the upper orifices [5], leading to liver wood overacting on stomach earth, or middle-jiao spleen deficiency with phlegm obstruction, and dysfunction of the triple burner qi mechanism. Clinical manifestations often include patterns such as stomach cold with qi rebellion (deep, slow hiccups aggravated by cold) and liver qi stagnation (fluctuating with mood) [6].

Currently, conventional Western medications (e.g., baclofen) have an efficacy rate of only 60%-70% and are associated with side effects such as drowsiness. In contrast, acupuncture therapy, by bidirectionally regulating medullary nerve excitability and gastrointestinal hormones (increasing motilin and decreasing substance P), achieves a clinical total effective rate of 93.8% while controlling the incidence of adverse reactions below 0.3%. This highlights its therapeutic advantage of "harmonizing the pivotal mechanism and calming the ascending counterflow" in TCM [7].

In recent years, there has been an increasing number of literature reports on acupuncture treatment for post-stroke hiccup, including methods such as electroacupuncture, floating needle, and abdominal acupuncture [8]. However, a systematic summary of these techniques is currently lacking. Therefore, this study reviewed literature on acupuncture for post-stroke hiccup published in CNKI, VIP, Wanfang, and PubMed databases from January 2015 to June 2025, conducting a comprehensive summary. A total of 2, 280 relevant articles were retrieved. After removing duplicates and irrelevant articles, 712 remained. By selecting techniques featured in more than 15 articles, nine high-frequency acupuncture therapies were identified. These include specialized needle techniques: electroacupuncture (153 articles), warm needling (98 articles), floating needle (67 articles); microsystem techniques: scalp acupuncture (112 articles), Peng's eye acupuncture (83 articles), Bo's abdominal acupuncture (77 articles); and empirical acupoints: strong stimulation at Cuanzhu (BL2) (141 articles), deep needling at Yifeng (TE17) (95 articles), and vagus nerve stimulation at Futu (LI18) (63 articles) [9].

2. Specialized Needle Techniques

2.1 Electroacupuncture

Electroacupuncture involves applying a continuous electrical current via an electroacupuncture device after inserting filiform needles into acupoints. In the treatment of post-stroke hiccup, points such as Neiguan (PC6), Zusanli (ST36), Zhongwan (CV12), and Geshu (BL17) are commonly selected, emphasizing "harmonizing the stomach, descending counterflow, and regulating qi movement." Operationally, after achieving deqi through routine needling, an electroacupuncture device is connected, often using dense-disperse waves or continuous waves (frequency typically 2-15 Hz), with current intensity adjusted to patient tolerance, and treatment duration generally around 30 minutes. Electroacupuncture enhances needling effects through stable, continuous stimulation. Its mechanism primarily involves regulating central nervous system excitability, inhibiting

abnormal discharges in the medullary hiccup center, and reducing diaphragmatic spasm by modulating vagal nerve function [10].

Liu Shuangling and Gao Weibin's team selected bilateral Jiaji points (EX-B2) at C3, C4, and C5 [11], using electroacupuncture to regulate medullary hiccup center and vagal nerve excitability. Treatment was twice daily for 30 minutes using sparse waves, with current adjusted to tolerance. The time to reduce hiccup frequency by ≥50% shortened to 3-5 days, with lower recurrence rates compared to the control group. Liao Huawei's team used Zusanli (ST36) and Neiguan (PC6) as primary points, combined with rehabilitation training, to regulate gastrointestinal function and diaphragmatic spasm. Electroacupuncture parameters were continuous wave (2 Hz), current intensity 0.5-1.5 mA, once daily. Needling ST36 was noted to inhibit hyperactive gastric peristalsis and regulate cerebral blood flow and glucose metabolism (PET-CT showed enhanced frontal lobe metabolism). Wang Guifang and Wu Xiaoguang's team combined body points (Tanding [LI17] and Zusanli [ST36]) with auricular points (Shenmen [TF4], Jiaogan [AH6a]) for electroacupuncture stimulation, achieving multi-target intervention. Auricular point pressing combined with electroacupuncture using dense-disperse waves (5/45 Hz) was administered for 30 minutes daily. Auricular points regulate autonomic nerve function, working synergistically with body points to enhance efficacy, particularly in refractory cases. Qiao Jianju's team performed Zusanli (ST36) point injection of chlorpromazine (25 mg) combined with electroacupuncture, integrating pharmacological and physical stimulation. After chlorpromazine injection, electroacupuncture with dense-disperse waves was applied, with evaluation after 12 treatments. Chlorpromazine inhibits medullary dopamine receptors, while electroacupuncture enhances vagal tone, synergistically relieving diaphragmatic spasm.

2.2 Warm Needling

Warm needling is a therapeutic method that combines acupuncture with moxibustion, enhancing the therapeutic effect through thermal stimulation. In the treatment of post-stroke hiccup, points such as Zhongwan (CV12), Zusanli (ST36), and Guanyuan (CV4) are commonly selected, aiming to harmonize the spleen and stomach, warm the middle and descend counterflow. Operationally, after inserting the filiform needle and achieving deqi, a moxa stick is placed on the needle handle and ignited, allowing the warmth to conduct along the needle body. Generally, each point is moxibusted for 10-15 minutes, with a total needle retention time of about 30 minutes. Warm needling possesses both the "dredging" effect of acupuncture and the "warming" effect of moxibustion, making it suitable for patients with hiccup due to cold stagnation or spleen-stomach deficiency. Its mechanism may involve improving local blood circulation, enhancing gastrointestinal motility, and regulating neural reflexes, thereby alleviating diaphragmatic spasm [12].

Chen Zhao's team selected bilateral Neiguan (PC6) [13], Zusanli (ST36), and Geshu (BL17). After needling, 654-2 (anisodamine) was injected at Zusanli and Neiguan, combined with moxibustion at Geshu (BL17), once daily for three consecutive days. Moxibustion temperature was controlled at 45-50°C for 15 minutes. Moxibustion at Geshu inhibits sympathetic nerve excitation, while 654-2 blocks M receptors, synergistically relieving diaphragmatic spasm. Li Dongdong's team used Zhongwan (CV12) and Zusanli (ST36) as primary points, with moxibustion at Guanyuan (CV4) and Qihai (CV6), combined with a self-formulated counterflow-descending decoction (containing Pinellia ternata, Kaki calyx, etc.). Moxibustion was performed once daily, and the decoction was administered twice daily for a 7-day course. After treatment, patients showed elevated motilin (MTL) levels ($P<0.01$) and decreased gastrin (GAS) levels ($P<0.05$), indicating regulation of gastrointestinal hormone secretion. Deng Xia's team used body points Neiguan (PC6) and Zusanli (ST36), with moxibustion at Pishu (BL20) and Weishu (BL21), combined with auricular point pressing (Shenmen [TF4], Jiaogan [AH6a]). Moxibustion temperature was 40-42°C for 20 minutes each session, with auricular points pressed three times daily. Moxibustion warms and tonifies the spleen and stomach, while auricular points regulate autonomic nerves, synergistically improving diaphragmatic spasm [14].

2.3 Floating Needle

Floating needle is a needling technique characterized by superficial subcutaneous release. It achieves therapeutic goals by performing sweeping and scattering stimulation in the superficial layer of areas related to the lesion. In the treatment of post-stroke hiccup, areas such as the neck, anterior chest region, or diaphragm-related projection areas are often selected. The procedure uses a specialized floating needle, inserted horizontally in the superficial subcutaneous layer, followed by left-right sweeping and scattering movements over a wide range. Traditional "deqi" sensation is generally not pursued, and stimulation is gentle. Needle retention time is approximately 20-30 minutes. The mechanism primarily involves releasing local fascial tension, improving soft tissue status, and regulating related neural reflex pathways, thereby alleviating abnormal diaphragmatic contraction [15].

Fu Zhonghua's team, based on the floating needle "muscle treatment" theory [16], selected superficial fascia regions related to diaphragmatic function (such as the sternocleidomastoid, serratus anterior, rectus abdominis, etc.) for floating needle intervention to regulate abnormal diaphragmatic contraction. A disposable floating needle was inserted into the superficial subcutaneous fascia layer of "diaphragm-related affected muscles" (tight muscles identified by palpation, such as the lower sternocleidomastoid and middle-upper serratus anterior), with the needle tip directed toward the lesion. Fan-shaped sweeping and scattering (approximately 100 times per minute) was performed, combined with "breath-holding-exhalation" reperfusion activities (guiding the patient to actively contract-relax the diaphragm-related muscles). Each treatment lasted 20-30 minutes, once daily for 3-5 consecutive days. Affected muscle tension (VAS score) and patient comfort (NRS score) were recorded, showing a significant reduction in affected muscle tension after treatment ($P<0.01$), with no adverse reactions such as skin damage or pneumothorax. The acupuncture department of Guangdong Provincial Hospital of Traditional Chinese Medicine selected the superficial fascia layer near "Geshu (BL17) (bilateral) and

Zhongwan (CV12)" for floating needle sweeping and scattering, combining traditional point theory (Geshu regulates the diaphragm, Zhongwan harmonizes the stomach and descends counterflow). In the floating needle group, the needle was inserted into the superficial subcutaneous fascia layer 2 cm lateral to Geshu (bilateral) and Zhongwan (avoiding deep muscles). After 2 minutes of sweeping and scattering, the needle was retained for 5 minutes, repeated three times (total duration 20 minutes), once daily for 3 days. The control group received conventional filiform needling at the above points (deep needling 1-1.5 cun), with needle retention for 20 minutes, once daily. Floating needle, through extensive stimulation of the superficial fascia layer, may act more directly on the neuromuscular pathways surrounding the diaphragm compared to deep point needling.

3. Microsystem Techniques

3.1 Scalp Acupuncture

Scalp acupuncture is a method based on the functional localization of the cerebral cortex, dividing the scalp into different functional zones for needling. In the treatment of post-stroke hiccup, functional zones related to medulla oblongata, respiratory, and digestive regulation, such as the lateral forehead line, midline vertex line, and lateral vertex line, are often selected. Operationally, a subcutaneous horizontal needling method is mostly used, inserting the needle quickly along the scalp for about 0.5-1 cun. After insertion, rapid twisting and turning (about 200 times/min) is performed to enhance stimulation of the cortical functional areas. Needle retention time is generally 30 minutes, with intermittent manipulation to maintain stimulation intensity. The mechanism primarily involves regulating the cerebral cortex's control over the medullary hiccup center, improving central nervous system excitability, thereby inhibiting abnormal diaphragmatic contraction.

Shi Xuemin's team, based on the "Xing Nao Kai Qiao" (awakening the brain and opening the orifices) needling theory, selected the scalp acupuncture "stomach zone" (corresponding to the lower part of the precentral gyrus, regulating stomach-diaphragm function) and "motor zone" (corresponding to the limb motor center, indirectly regulating autonomic nerve function), combined with body acupuncture to treat post-stroke hiccup. The "stomach zone" (a 2 cm line from the lower point of the motor zone forward, parallel to the midline) and "motor zone" (a 3 cm line from a point 0.5 cm posterior to the midpoint of the anterior-posterior midline downward, parallel to the midline) were used. Standard scalp acupuncture line localization was employed. Needles were quickly inserted into the subgaleal aponeurosis layer (depth about 1-1.5 cun), followed by rapid small-amplitude twisting and turning (200 times/min for 1 minute), with needle retention for 30 minutes. Neuroelectrophysiological monitoring (e.g., phrenic nerve conduction latency) showed reduced excitability of the hiccup reflex arc after treatment. No adverse reactions such as scalp infection or needle breakage were reported [17].

3.2 Peng's Eye Acupuncture

Peng's eye acupuncture is a microsystem technique that uses specific areas around the eye as stimulation points, corresponding to the zang-fu organs of the body for regulation. In the treatment of post-stroke hiccup, eye zones related to the spleen, stomach, diaphragm, and central regulation, such as the stomach zone, diaphragm zone, and upper jiao zone, are often selected. During operation, fine filiform needles are used to puncture subcutaneously along the orbital margin, with shallow and quick insertion. Strong needling sensation is generally not emphasized, with slight local distension or no significant discomfort being acceptable. Needle retention time is approximately 20-30 minutes. The mechanism primarily involves reflexively regulating the central nervous system and visceral functions through the rich nerve endings around the eye, thereby harmonizing the stomach, descending counterflow, and alleviating diaphragmatic spasm.

Peng Jingshan's team, based on the "observing the eyes to identify signs" theory, selected eye zones corresponding to the liver, stomach, and middle jiao (such as the liver zone, stomach zone, and middle jiao zone) to regulate the ascending and descending of liver and stomach qi, inhibiting abnormal diaphragmatic contraction. Eye acupuncture was applied at bilateral liver, stomach, and middle jiao zones (located based on the morphology of the eye's blood vessels). A 0.25×13 mm filiform needle was used for shallow subcutaneous needling, with small-amplitude twisting and turning (200 times/min for 1 minute), and needle retention for 30 minutes, once daily for 3 consecutive days. The immediate efficacy rate (hiccup cessation within 30 minutes after treatment) was 58.3% (7/12), and the total effective rate (hiccup frequency reduced by ≥80%) was 83.3% (10/12). Evaluation of zang-fu function improvement through changes in tongue appearance and ocular blood vessel morphology showed that 75% of patients had thick greasy tongue coating turning thin and white after treatment [18].

3.3 Bo's Abdominal Acupuncture

Bo's abdominal acupuncture is based on the theory that "the abdomen is the root of yin and yang," regulating the circulation of qi and blood throughout the body by needling specific zones in the abdomen. In the treatment of post-stroke hiccup, points such as Zhongwan (CV12), Qihai (CV6), Guanyuan (CV4), and Huaroumen (ST24) are often selected, emphasizing "regulating the whole body through the abdomen." Operationally, shallow needling is mostly used, with a relatively shallow insertion depth (about 0.5-1 cun), gentle technique, and mild needling sensation as the mainstay. Strong stimulation is generally not applied. Needle retention time is approximately 30 minutes. The mechanism primarily involves regulating the spleen and stomach qi mechanism, restoring ascending and descending functions, thereby achieving "descending counterflow to stop hiccup," while also harmonizing the overall qi movement.

Bo Zhiyun's team, based on the core experience of "abdominal acupuncture for treating chronic pain," explored the regulatory effects of abdominal points (Zhongwan [CV12], Xiawan [CV10], Huaroumen [ST24]) on post-stroke hiccup, emphasizing the therapeutic principle of "regulating the spleen and stomach, descending counterflow qi." The primary points were Zhongwan (CV12, 4 cun above the umbilicus), Xiawan (CV10, 2 cun above the umbilicus), and Huaroumen

(ST24, 1 cun above the umbilicus and 2 cun lateral). Supplementary points were added based on pattern differentiation (e.g., Taichong [LV3] for liver qi stagnation, Zusanli [ST36] for spleen-stomach deficiency). Using a 0.22×40 mm specialized Bo's abdominal acupuncture needle (fine needle), quick insertion was made subcutaneously (depth 10-15 mm, avoiding blood vessels), followed by light twisting and turning (200 times/min for 1 minute). Needle retention was for 30 minutes, once daily for 5 consecutive days. Motilin (MTL) levels were found to be elevated after treatment compared to baseline ($P<0.05$), suggesting that abdominal acupuncture may inhibit diaphragmatic spasm by promoting gastrointestinal motility [19].

4. Empirical Acupoints

4.1 Strong Stimulation at Cuanzhu (BL2)

Cuanzhu (BL2) is located in the depression at the medial end of the eyebrow, belonging to the Bladder Meridian of Foot-Taiyang. It is commonly used clinically to regulate qi in the head and face, open orifices, and refresh the mind. In the treatment of post-stroke hiccup, strong stimulation techniques are often employed. Operationally, perpendicular needling or slightly oblique downward needling is commonly used, inserting the needle about 0.3-0.5 cun. The emphasis is on the needling manipulation, often using rapid lifting, thrusting, twisting, and turning to obtain a distinct sour, distending, painful sensation, sometimes radiating to the forehead. Some studies emphasize intermittent manipulation to maintain a relatively strong stimulation intensity. The mechanism is often attributed to reflexes involving branches of the trigeminal nerve, enhancing the inhibitory effect on the medullary hiccup center, thereby reducing abnormal diaphragmatic excitability and achieving hiccup cessation, particularly suitable for patients with frequent or refractory hiccups.

In reported literature, most scholars use Cuanzhu (BL2) as a single point or bilaterally to treat post-stroke hiccup. One research team selected patients with refractory post-stroke hiccup, using bilateral Cuanzhu (BL2) as the primary points with strong stimulation, performing rapid lifting, thrusting, twisting, and turning. Needle retention was 30 minutes each session, with manipulation every 10 minutes to maintain needling sensation, once daily for 5 consecutive days. Results showed that most patients experienced a significant reduction in hiccup frequency within 2-3 treatments, with some experiencing immediate relief. Another scholar combined this with electroacupuncture stimulation, connecting bilateral Cuanzhu (BL2) points, using dense-disperse waves (2/15 Hz), with current intensity adjusted to patient tolerance, achieving significantly improved total efficacy. Related studies suggest that strong stimulation at Cuanzhu (BL2) can quickly regulate central nervous system excitability through "opening orifices and descending counterflow," making it a clinically effective empirical method [20].

4.2 Deep Needling at Yifeng (TE17)

Yifeng (TE17) is located in the depression behind the earlobe, belonging to the Sanjiao Meridian of Hand-Shaoyang, adjacent to important structures such as the facial nerve, glossopharyngeal nerve, and vagus nerve. In the treatment of post-stroke hiccup, deep needling is often employed to enhance the regulatory effect on brainstem nerve nuclei. Operationally, the affected side or bilateral Yifeng (TE17) points are selected. The needling direction is often toward the contralateral orbit or throat, with a deeper insertion than conventional points (about 1.0-1.5 cun) to obtain a sour, distending sensation radiating to the front of the ear, pharynx, or neck. Emphasis is placed on the conduction of needling sensation during treatment to enhance intervention on the central reflex arc. The mechanism may involve regulating medullary reticular formation and related nerve nuclei activities, inhibiting the abnormal hiccup reflex [21].

In clinical literature, deep needling at Yifeng (TE17) is widely applied. One study selected patients with persistent post-stroke hiccup, using deep needling at bilateral Yifeng (TE17) points, with the needle tip obliquely directed toward the contralateral canthus, inserting about 1.2 cun. After achieving deqi, mild twisting and turning was performed, with needle retention for 30 minutes, once daily for 7 consecutive days. Results showed that most patients experienced significant relief of hiccup symptoms, with marked reductions in both frequency and duration of hiccup episodes. Another study combined Yifeng (TE17) with points such as Fengchi (GB20) and Neiguan (PC6) to form a "head-face-central" combined regulation protocol, achieving superior efficacy compared to simple body acupuncture. Related studies suggest that deep needling at Yifeng (TE17) exerts a strong regulatory effect on central hiccup by directly acting on cranial nerve pathways, making it an important empirical point for treating post-stroke hiccup [22].

4.3 Vagus Nerve Stimulation at Futu (LI18)

Futu (LI18) is located on the neck, at the anterior border of the sternocleidomastoid muscle, level with the laryngeal prominence, belonging to the Large Intestine Meridian of Hand-Yangming. Its anatomical location is adjacent to the vagus nerve trunk. In the treatment of post-stroke hiccup, Futu (LI18) primarily exerts its effect by stimulating the vagus nerve. Needling is often performed perpendicularly or slightly obliquely inward and backward, with an insertion depth of about 0.8-1.2 cun. The manipulation primarily involves mild lifting, thrusting, twisting, and turning. Some studies combine this with low-frequency electroacupuncture (commonly 2-10 Hz), with current intensity adjusted to patient tolerance. During needling, a radiating sensation toward the throat or chest may occur. The main mechanism involves regulating vagal tone, inhibiting abnormal excitation in the hiccup reflex arc, thereby reducing involuntary diaphragmatic contractions [23].

In reported literature, Futu (LI18) is often used as one of the core points in comprehensive treatment. One scholar selected patients with post-stroke hiccup, using bilateral Futu (LI18) as primary points, combined with Zusanli (ST36), Zhongwan (CV12), and other points. After needling, electroacupuncture was applied using continuous wave (2 Hz) for 30 minutes, once daily for 5-7 consecutive days. Results showed a significant reduction in hiccup frequency, with some cases experiencing complete cessation. Another study using only electroacupuncture at Futu (LI18) found that the acupuncture

group had advantages in symptom duration improvement compared to a conventional medication group. Related studies suggest that Futu (LI18) acts through a "neuromodulation" pathway, complementing the traditional mechanism of "descending counterflow and harmonizing the stomach," reflecting the multi-pathway synergistic regulation characteristic of acupuncture in treating post-stroke hiccup [24].

5. Discussion and Summary

Post-stroke hiccup (PSH), as a common complication following stroke, is closely associated with abnormal excitability of the medullary hiccup center, vagal dysfunction, and involuntary diaphragmatic spasm. Modern medicine primarily employs symptomatic treatment with medications, but efficacy varies individually and adverse effects are relatively pronounced. Acupuncture therapy, due to its rapid onset, high safety, and holistic regulatory advantages, has gradually become an important clinical intervention. A review of relevant literature from 2015 to 2025 reveals that current research primarily focuses on the application of different stimulation methods and point selection systems, essentially reflecting the integration of multi-level neural regulation and overall qi mechanism modulation [25].

Regarding stimulation methods, techniques represented by electroacupuncture, warm needling, and floating needle are most widely used. Among these, electroacupuncture has the most reported literature (153 articles), suggesting its dominant position in clinical practice. Electroacupuncture enhances the needling effect through stable, continuous electrical stimulation, offering distinct advantages in regulating central nervous system excitability. It can also inhibit abnormal discharges in the medullary hiccup center by influencing vagal function, thereby reducing diaphragmatic spasm. Warm needling adds thermal stimulation to acupuncture, acting through "warming yang, dispersing cold, regulating the middle, and descending counterflow." It is more suitable for patients with spleen-stomach deficiency cold or those with a longer course of disease, showing advantages in improving overall functional status. Floating needle, a superficial fascial stimulation technique, relieves local soft tissue tension and regulates related neural reflexes, providing certain effects on alleviating diaphragmatic tension and accompanying symptoms. These three methods act from different perspectives—"continuous neural stimulation," "thermal regulation," and "fascial release" — reflecting the diversification trend in stimulation modalities.

In terms of microsystem techniques, scalp acupuncture, Peng's eye acupuncture, and Bo's abdominal acupuncture constitute a relatively comprehensive regional regulation system. Scalp acupuncture, based on the functional localization of the cerebral cortex, stimulates specific scalp zones to regulate the "cortex-brainstem" pathway, controlling the hiccup reflex at the central level, making it particularly suitable for patients with a clear central mechanism. Peng's eye acupuncture stimulates micro-zones around the eye, reflexively regulating the central nervous system and visceral functions through abundant nerve endings. Its stimulation is gentle and operation simple, making it suitable for patients with weak constitution or those intolerant to strong stimulation. Bo's abdominal acupuncture, with its core concept of "regulating the middle jiao," regulates spleen and stomach qi through abdominal zones, achieving "normalization of ascending and descending, smooth flow of qi." While improving hiccup, it also aids in the recovery of digestive function. These three methods approach treatment from the levels of "central regulation," "reflex modulation," and "holistic qi regulation," respectively, reflecting the developmental trend of acupuncture therapy from localized to systemic approaches [26].

Regarding specific point selection, empirical points such as Cuanzhu (BL2), Yifeng (TE17), and Futu (LI18) are frequently used and have clear neuroanatomical foundations. Cuanzhu (BL2) activates the trigeminal nerve reflex through strong stimulation, inhibiting the medullary hiccup center, with rapid clinical onset suitable for acute episodes. Deep needling at Yifeng (TE17), adjacent to the facial, glossopharyngeal, and vagus nerves, can directly influence relevant brainstem nuclei, exerting a strong regulatory effect on central hiccup. Futu (LI18) leverages its anatomical proximity to the vagus nerve trunk, intervening in the hiccup reflex arc by modulating vagal tone. These empirical points act through different pathways—"head-face reflex," "cranial nerve regulation," and "vagal intervention"—characterized by strong specificity and rapid efficacy, making them core point selection strategies in clinical practice.

Synthesizing the above analysis, the mechanisms of acupuncture in treating post-stroke hiccup can be roughly summarized into three main lines: first, central nervous regulation, reducing abnormal excitability by influencing the cerebral cortex and medullary hiccup center; second, peripheral nerve regulation, particularly vagal intervention, directly acting on the hiccup reflex arc; third, meridian qi mechanism regulation, restoring normal diaphragmatic rhythm through "harmonizing the stomach, descending counterflow" and "regulating ascending and descending." Although different needling methods and points have varying emphases, they ultimately converge on these three core mechanisms, forming synergistic effects in clinical practice [27].

However, current research still has certain limitations: first, generally small sample sizes and a lack of multicenter, large-sample randomized controlled trials, requiring improvement in the level of evidence; second, the absence of standardized acupuncture protocols, with significant variations in point selection, manipulation, and stimulation parameters across studies, affecting the reproducibility of results; third, efficacy evaluation mostly relies on subjective symptom indicators, lacking objective quantitative criteria and long-term follow-up data; fourth, mechanism studies often remain at the speculative level, lacking in-depth experimental validation.

Future research can further focus on the following aspects: first, standardizing acupuncture procedures and establishing standardized treatment protocols; second, combining modern technologies such as functional imaging and electrophysiology to deeply explore central and peripheral neural regulation mechanisms; third, strengthening comparative studies among different needling methods to

identify optimal treatment models; fourth, improving the efficacy evaluation system and increasing long-term follow-up to enhance clinical guidance value.

In summary, acupuncture therapy demonstrates good efficacy and application prospects in treating post-stroke hiccup through multi-target, multi-level regulatory mechanisms. With further standardization and in-depth research, it is expected to become one of the important interventions for this condition.

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