

Acupuncture Combined with Medication for Chemotherapy-Induced Nausea and Vomiting Based on the Theory of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals”: A Review of Research Progress and Mechanisms

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Abstract: Chemotherapy-induced nausea and vomiting (CINV) is a common adverse reaction in the digestive system during chemotherapy. Western medicine primarily relies on prophylactic antiemetic drugs, which have suboptimal efficacy against delayed vomiting, exhibit interpatient variability, and carry numerous adverse effects when excessively combined, thus presenting certain limitations. The theory of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals” originates from Huangdi Neijing (The Yellow Emperor’s Inner Classic), was systematically expounded by Li Dongyuan during the Jin-Yuan period in his Treatise on the Spleen and Stomach (Piwei Lun), and has been continuously innovated and developed by subsequent physicians, ultimately forming the distinctive traditional Chinese medicine theory of the spleen and stomach. Starting from the relationship between the theory of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals” and CINV, this paper posits that the theory of CINV is deficiency of original qi in the middle jiao and dysfunction of the ascending and descending movements of the spleen and stomach. Acupuncture Combined with Medication, integrating internal and external treatment, can externally regulate and unblock meridians, qi, and blood, and internally regulate Zang-Fu Organs, support healthy qi, and eliminate pathogenic factors. Its modalities mainly include Acupuncture combined with medication, Acupuncture-moxibustion combined with medication, Acupuncture-moxibustion combined with Chinese herbal acupoint application, and Acupoint injection. Its mechanisms of action may involve regulating neurotransmitters, promoting the repair of gastrointestinal mucosal injury, regulating gastrointestinal hormone levels, promoting gastrointestinal peristalsis, and inhibiting the chemoreceptor trigger zone and vomiting center. This paper reviews Acupuncture Combined with Medication in the treatment of CINV based on the theory of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals”, aiming to provide a reference for clinical research on CINV.

Keywords: Chemotherapy-induced nausea and vomiting; Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals; Acupuncture Combined with Medication; Mechanism; Review

1. Introduction

Cancer poses a serious threat to human life and safety. In 2022, both the number of new cancer cases and the number of cancer deaths in China ranked first in the world, presenting a grim situation [1]. As one of the means of antitumor therapy, chemotherapy has a long history and occupies an important position in comprehensive tumor treatment, being widely applied to the treatment of chemosensitive tumors. While it kills tumor cells and prolongs patients’ survival, it also causes adverse reactions such as myelosuppression, neurotoxicity, and gastrointestinal reactions. Among these, chemotherapy-induced nausea and vomiting (CINV) is one of the most common adverse reactions, which can lead to water and electrolyte disturbances, nutritional deficiency, anorexia, and other adverse consequences, significantly affecting patients’ quality of life, thereby reducing their adherence to subsequent antitumor treatment and even causing them to discontinue treatment [2]. Currently, commonly used clinical prophylactic antiemetic drugs mainly include 5-HT₃ receptor antagonists, NK-1 receptor antagonists, glucocorticoids, dopamine receptor blockers, atypical antipsychotics, benzodiazepines,

phenothiazines, and others [3]. The development and marketing of these related drugs have effectively prevented and controlled acute chemotherapy-induced vomiting, but the control of delayed vomiting remains unsatisfactory, and therapeutic efficacy varies among individuals. Excessive combined use of multiple antiemetic drugs may lead to adverse reactions such as constipation, headache, and dizziness, thus presenting certain limitations [4]. Internal damage to the spleen and stomach gives rise to a hundred diseases; when the spleen and stomach are deficient, the meridians, collaterals, and Zang-Fu Organs lose their nourishment, qi and blood become obstructed, the Zang-Fu Organs become dysfunctional, and yin and yang fall out of harmony. Acupuncture Combined with Medication, as a traditional Chinese medicine therapeutic approach that can harmonize the Zang-Fu Organs, unblock meridians and collaterals, and produce synergistic effects, has demonstrated unique advantages in the prevention and treatment of CINV. Based on the theory of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals”, this paper explores Acupuncture Combined with Medication in the treatment of CINV and reviews its research progress and

mechanisms, aiming to provide a theoretical basis for the application of Acupuncture Combined with Medication in chemotherapy-induced vomiting.

2. Theoretical Origins of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals”

The theory of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals” originates from *Huangdi Neijing (The Yellow Emperor’s Inner Classic)*, which provides a highly concise summary of the relationships among the spleen and stomach, the Zang-Fu Organs, and the meridians and collaterals. *Suwen · Taiyin Yangming Lun* states: “The Foot Taiyin is the three yin; its vessel runs through the stomach, belongs to the spleen, and connects with the throat. Therefore, the Taiyin distributes qi to the three yin. The Yangming is the exterior and the sea of the five zang and six fu Organs; it also distributes qi to the three yang. The Zang-Fu Organs each receive qi from the Yangming through their respective meridians; thus, it moves fluids for the stomach.” This indicates that the spleen transports the essence of water and grain received and decomposed by the stomach to the three yin and three yang meridians and perfuses it into the five zang and six fu Organs, profoundly expounding the core relationship in which the spleen and stomach serve as the pivot for the distribution of essential substances and the foundation upon which the Zang-Fu Organs, meridians, and collaterals depend for nourishment. *Lingshu · Wuwei* points out that “the five zang and six fu Organs all receive qi from the stomach,” further explicitly clarifying the physiological relationship between the spleen and stomach and the Zang-Fu Organs, thereby laying the foundation for the formation of the theory of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals”. In the Eastern Han dynasty, Zhang Zhongjing, building on this foundation, pioneered six-meridian pattern differentiation, using the interrelationships among the six meridians to analyze the transmission patterns of disease among the meridians, collaterals, and Zang-Fu Organs, and to judge the trend of disease based on the abundance or decline of Zang-Fu Organ qi and blood, thereby enabling precise medication that directly reaches the disease site [5]. *Treatise on Cold Damage (Shanghan Lun)* holds that “the spleen and stomach are the middle jiao, which raise the yang of the heart and lungs and guard the yin of the liver and kidney,” and that spleen-stomach disharmony is the fundamental cause of the onset of six-meridian diseases. Therefore, he not only placed particular emphasis on the spleen and stomach in the medications used for treating six-meridian diseases, but also embodied this emphasis in the processes of decoction and administration, in the post-formula dietary and other precautions and cautions, and in inferring disease prognosis from the abundance or decline of stomach qi, thereby integrating the protection of the spleen and stomach throughout six-meridian pattern differentiation and treatment [6][7]. The Jin-Yuan physician Li Dongyuan, on the basis of inheriting the thought of *Huangdi Neijing* and *Shanghan Lun* and combining it with his own long-term clinical practice, established *Treatise on the Spleen and Stomach (Piwei Lun)* [8], and explicitly proposed the theory of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals”. He pointed out that the spleen and stomach are the

foundation of the body’s original qi, and held that the root of spleen-stomach insufficiency lies in insufficiency of yang qi and excess of yin qi. In addition, Dongyuan analyzed the process of food entering the stomach described in *Huangdi Neijing* in conjunction with the four seasons. In “On the Principle of Life and Death of Heaven and Earth Yin and Yang Residing Between Ascending, Descending, Floating, and Sinking” in *Treatise on the Spleen and Stomach*, he states: “The stomach is the sea of water and grain. When food enters the stomach, the essential qi is first transported by the spleen and returns to the lungs, moving upward with the command of spring and summer to nourish the whole body—this is the clear qi forming heaven. After ascending, it then descends and is transported to the bladder, moving with the command of autumn and winter to transform and excrete the dregs and discharge the flavors—this is the turbid yin forming earth.” This clearly indicates that the spleen and stomach are the pivot of qi movement’s ascent and descent, with particular emphasis on the importance of raising yang. Only when the spleen and stomach function healthily in transportation and transformation, raising the clear and lowering the turbid, can the normal physiological state be ensured in which “clear yang emerges from the upper orifices, turbid yin emerges from the lower orifices, clear yang spreads to the interstices, turbid yin flows to the five zang, clear yang fills the four limbs, and turbid yin returns to the six fu,” thereby achieving harmony of yin and yang [9]. For this reason, Dongyuan proposed: “One should proceed from the insufficiency of the six qi and the methods of ascending, descending, floating, and sinking, and prescribe medication according to the pattern. ... In treating the excess or deficiency of the liver, heart, lungs, and kidneys, whether to supplement or drain, only the medicines that benefit the spleen and stomach are of the utmost importance.” That is, treatment should focus primarily on regulating the spleen and stomach, with pattern-based medication guided by the theory of the six qi and the principles of ascending, descending, floating, and sinking. In the Qing dynasty, Ye Tianshi of the warm disease school, under the influence of Dongyuan’s teachings, emphasized the role of the spleen and stomach in the human body, further clarifying the separate treatment of the spleen’s ascending and the stomach’s descending, refining pattern differentiation and treatment for disorders of ascent and descent, and perfecting the theoretical system of the spleen and stomach, exerting a profound influence on later generations [10].

3. Discussion of the Understanding of CINV Based on the Theory of “Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals”

Traditional Chinese medicine holds that chemotherapeutic drugs are exogenous pathogenic factors that, upon entering the human body, produce “drug toxin” [11]. In a broad sense, drug toxin refers to the biased properties of drugs, which may be present in concentrated form in terms of the four qi or five flavors [12]; in a narrow sense, drug toxin refers to those with strong medicinal properties that readily cause adverse reactions after administration, and may even lead to death [13]. *Suwen · Zhizhen Yao Da Lun Pian* states: “Prolonged use increases qi—this is the norm of things transforming; when qi is increased and prolonged, this is the cause of premature

death.” That is, excessive or prolonged consumption of the five flavors readily causes a preponderance of Zang-Fu Organ qi, leading to disease. *Rumen Shiqin · Volume Six · Forty-Seven* says: “When drugs are used for a long time, their nature is harsh and severe, and may even cause death,” meaning that drugs with drastic effects, when used over a long period, can damage the body’s healthy qi, disrupt yin and yang, and in severe cases cause death. Whether viewed from the perspective of drug toxin in the broad or narrow sense, drug toxin can lead to deficiency of healthy qi and disharmony of the Zang-Fu Organs. CINV belongs to the categories of “vomiting” and “regurgitation” in traditional Chinese medicine. The term vomiting was first seen in *Huangdi Neijing* [14]. *Zhubing Yuanhou Lun · Vomiting* points out that “vomiting is all caused by weakness of the spleen and stomach.” In the Song dynasty, Yan Yonghe’s *Jisheng Fang · Vomiting* states: “If the spleen and stomach are not damaged, there will be no affliction of vomiting.” It can be seen that weakness of the spleen and stomach is the fundamental cause of vomiting. As one of the adverse reactions of chemotherapy in tumor patients, CINV closely conforms to the above-mentioned theory of drug toxin damaging the stomach. Combined with the fact that tumor patients themselves already have spleen-stomach deficiency or prolonged illness with bodily weakness, the middle jiao stomach qi is depleted even more severely. When the spleen and stomach are weak, the meridians, and collaterals lose their nourishment, the qi and blood of the twelve meridians do not flow smoothly, and qi and blood stagnation prevents reaching the five zang and six fu Organs. The Zang-Fu Organs lose their nourishment, and the ascending and descending movements of the spleen and stomach become abnormal, so that clear yang fails to ascend and turbid yin fails to descend, generating damp turbidity, phlegm-dampness, or food stagnation, which further aggravates qi movement obstruction. When qi rebels upward, vomiting occurs, presenting various manifestations of nausea and vomiting. In addition, some non-pharmacological factors can also affect the occurrence and severity of CINV. Emotional states such as anxiety, tension, fear, and depression can increase the risk of nausea and vomiting [11]. As stated in *Suwen · Yinyang Yingxiang Da Lun*, “anger injures the liver,” “joy injures the heart,” “pensiveness injures the spleen,” “sorrow injures the lungs,” and “fear injures the kidneys,” indicating that extreme excess of the five emotions readily damages the Zang-Fu Organs. Tumor patients are prone to emotional depression, causing liver qi stagnation that attacks the stomach transversely, or excessive worry injuring the spleen, leading to weakness of the spleen and stomach, abnormal ascending and descending of qi movement, and loss of harmony between yin and yang. In summary, the treatment of CINV should take fortifying the spleen and harmonizing the stomach as the fundamental principle, supplemented by warming the middle and dissipating cold, warming and transforming phlegm-fluid, clearing heat and resolving dampness, promoting digestion and removing food stagnation, and soothing the liver and regulating qi, so that the spleen and stomach function healthily in transportation and transformation, ascent and descent proceed in an orderly manner, clear yang can ascend and turbid yin can descend, and thus vomiting and rebellion cease naturally. As recorded in “When the Stomach Is Deficient, the Zang-Fu Organs, Meridians, and Collaterals All Have Nothing to Receive and Therefore All Become

Simultaneously Diseased”: “Moreover, the spleen relies entirely on the harmony of stomach earth; then it has something to receive and generates nutritive qi, all four Zang-Fu Organs of the body flourish, the twelve spirits assume their duties, the skin and hair are firm and dense, the sinews and bones are soft and harmonious, the nine orifices are unobstructed, and exogenous pathogenic factors cannot invade.”

4. Theoretical Basis for Acupuncture Combined with Medication in the Treatment of CINV

The concept of Acupuncture Combined with Medication is based on the theories of traditional Chinese medicine and Western medicine, combining acupuncture and moxibustion with medication (Chinese herbal medicine and Western drugs) as two therapeutic measures to achieve the goal of treating disease [15]. *Huangdi Neijing* laid the theoretical foundation for “Acupuncture Combined with Medication” and, based on the differences in their effects, proposed the therapeutic ideas that “toxic drugs treat the interior, while acupuncture and stone treat the exterior” and that “one must use toxic drugs to attack the interior, and use lancets, stones, acupuncture, and moxibustion to treat the exterior,” meaning that internal Zang-Fu Organ diseases can be treated with decoctions, while external diseases are treated with acupuncture and moxibustion [16][17]. Sun Simiao [17] advocated Acupuncture Combined with Medication, emphasizing that the three therapies of acupuncture, moxibustion, and medication must all be mastered, and that a good physician should know both acupuncture and medication. Li Dongyuan [18][19], based on the specific relationship between the spleen and stomach and the meridians and collaterals, proposed experience in treating the spleen and stomach with acupuncture and moxibustion, either using acupuncture alone, moxibustion alone, or Acupuncture combined with medication, centering on regulating the spleen and stomach and elevating middle yang, to treat disorders of the qi of the five zang. In the Ming dynasty, Yang Jizhou’s *Zhenjiu Dacheng (Great Compendium of Acupuncture and Moxibustion)* [20] proposed that “acupuncture, moxibustion, and medication are all indispensable to a physician,” holding that the treatment method selected differs according to the location of the disease. Wu Kun’s *Zhenfang Liuji* [21] proposed the academic viewpoint that “acupuncture and medication share the same principle,” integrating the combined use of acupuncture and medication into the thought of the spleen and stomach: in using medication and acupuncture, one should focus on the spleen and stomach, excel at raising yang, harmonize qi and blood, and combine hardness and softness. There are many more contents on the theory of Acupuncture Combined with Medication in ancient texts, which will not be elaborated further here due to limited space. Modern physicians, on the basis of inheriting the thought of predecessors and relying on the theories of integrated Chinese and Western medicine, have continuously innovated. The medications combined with acupuncture and moxibustion are no longer limited to traditional Chinese medicine in the form of pills, powders, ointments, and pellets, but have gradually expanded to the category of modern Western drugs. The routes of administration have also developed to include oral administration, external application,

injection, and intravenous infusion, among other methods, and have integrated the theories of acupoint properties and drug properties to form distinctive therapies such as acupoint application and acupoint injection [22]. The types of diseases treated also cover internal medicine, external medicine, gynecology, pediatrics, and the five sense organs, and even intractable and complicated diseases [23]. CINV is related to the spleen and stomach, and the core of its theory is abnormal ascending and descending of qi movement in the middle jiao, which is closely related to functional disorders of the associated Zang-Fu Organs, meridians, and collaterals. Acupuncture and moxibustion, guided by the theory of meridians and acupoints, can regulate and unblock meridians, qi, and blood through the selection of acupoints and their treatment, strengthening their role of “internally connecting with the Zang-Fu Organs and externally connecting with the limbs and joints,” while medications possess specific biased properties and can harmonize yin and yang, support healthy qi and eliminate pathogenic factors, and regulate the Zang-Fu Organs through their properties of cold, heat, warmth, and coolness, and of ascending, descending, supplementing, and draining. Acupuncture Combined with Medication can not only give play to their respective advantages, but also produce synergistic effects, enhancing the overall therapeutic efficacy through multiple targets, multiple levels, and multiple pathways while overcoming the limitations of a single treatment modality [24]. Numerous clinical studies have shown that CINV is an indication for Acupuncture Combined with Medication; its antiemetic effect is not only significant, but it can also improve patients’ quality of life, with few adverse reactions and high clinical application value, and thus is worthy of vigorous promotion.

5. Research Progress of Acupuncture Combined with Medication in the Treatment of CINV

5.1 Acupuncture Combined with Medication

Acupuncture is a therapeutic method in which various types of needles are used to apply different degrees of stimulation to specific acupoints on the human body to produce a therapeutic effect, and specifically includes filiform needle acupuncture, abdominal acupuncture, press-tack needle therapy, floating needle therapy, and others. For CINV, acupoint selection mostly involves acupoints of the Ren Mai, the Foot Yangming Stomach Meridian, the Foot Taiyin Spleen Meridian, and the Hand Jueyin Pericardium Meridian. Commonly used primary acupoints include Zusanli (ST36), Zhongwan (CV12), Neiguan (PC6), and Gongsun (SP4), while supplementary acupoints are selected according to pattern. Medication combinations include Chinese herbal formulas that primarily lower rebellion and harmonize the stomach, such as Shengjiang Xiexin Tang, Dingxiang Shidi Tang, Jupi Zhuru Tang, and Xiangsha Xiexin Tang, as well as classic Western antiemetic regimens, namely 5-HT₃ receptor antagonists, NK-1 receptor antagonists, dexamethasone, metoclopramide, or prochlorperazine. Therefore, Acupuncture combined with medication refers to acupuncture combined with Chinese herbal decoctions and acupuncture combined with Western antiemetic drugs, with a relatively broad scope of application. Yan Jihong [25] combined acupuncture at Neiguan, Zhongwan, Gongsun, Zusanli, and Fenglong(ST40) with

Chinese herbal decoctions (modified Dingxiang Shidi Tang, Jupi Zhuru Tang, etc.), and found that the time for improvement of vomiting symptoms in the observation group was (5.02±0.31) days, with a total treatment efficacy rate of 96.77%, while the time for improvement of vomiting symptoms in the control group was (10.36±0.42) days, $P<0.05$. Liang Xiaoning [26] applied ondansetron versus acupuncture at Zusanli, Sanyinjiao(SP6), and Zhongwan combined with Shengjiang Xiexin Tang, and found that the number of patients with grade III and grade IV vomiting reactions in the observation group accounted for 41.18% of the total cases in the observation group, far lower than that in the control group ($P<0.05$). Dong Yihui et al. [27] used Jupi Zhuru Tang combined with floating needle therapy for gastrointestinal reactions after chemotherapy for breast cancer, and found that the incidence of delayed nausea and vomiting in the treatment group was lower than that in the control group ($P<0.05$); motilin, CD3+, and CD4+ levels were higher than those in the control group, while gastrin and CD8+ levels were lower than those in the control group ($P<0.05$); and the Functional Living Index-Emesis (FLIE) scores and traditional Chinese medicine syndrome scores showed better improvement ($P<0.05$). Li Bo et al. [28] treated patients with gastric cancer of the cold-heat complex pattern with gastrointestinal reactions after chemotherapy using acupuncture combined with Xiangsha Xiexin Tang to supplement deficiency and drain excess, and to support healthy qi and eliminate pathogenic factors, effectively alleviating gastrointestinal adverse reactions after chemotherapy and improving quality of life. CINV is mostly related to the stimulation of the body by chemotherapeutic drugs to produce 5-hydroxytryptamine. Lei Tengting [29] used a random number table method to compare ondansetron combined with acupuncture at bilateral Zusanli, Neiguan, Weishu (BL21), and Pishu (BL20), comparing serum 5-hydroxytryptamine (5-HT) levels, nausea Visual Analogue Scale (VAS) scores, vomiting frequency, Functional Living Index-Emesis (FLIE) scores, and Karnofsky Performance Status (KPS) scores during the acute, delayed, and persistent phases, and found that serum 5-HT levels, VAS scores, and vomiting frequency were significantly reduced in the acupoint acupuncture group ($P<0.05$), while FLIE scores and KPS scores were significantly increased ($P<0.05$). Qin Junyun [30] used abdominal acupuncture (Zhongwan, Shuifen (CV9), Guanyuan (CV4), Qihai (CV6), etc.) on the basis of ondansetron for nausea and vomiting after chemotherapy for breast cancer, and found that the effective rate was 82.60% in the treatment group and 65.21% in the control group, $P<0.05$.

5.2 Acupuncture-Moxibustion Combined with Medication

Acupuncture-moxibustion includes moxibustion. Moxibustion is an external therapeutic method of traditional Chinese medicine in which moxa leaf is used as the main raw material to prepare moxa floss, moxa sticks, moxa cones, and the like, and the warming effect generated after ignition is applied to acupoints or specific sites on the body surface to achieve the purposes of warming meridians and dissipating cold, supporting healthy qi and eliminating pathogenic factors, and harmonizing qi and blood. Its treatment methods include direct moxibustion, indirect moxibustion, warming needle moxibustion, and heat-sensitive moxibustion, among others. Evidence-based acupoint selection mostly focuses on the Spleen Meridian and the Ren Mai, with commonly used

acupoints including Zusanli, Neiguan, Zhongwan, Shenque(CV8), Guanyuan, and Qihai. The Chinese herbal medicines used in combination are formulas that fortify the spleen, boost qi, and harmonize the stomach to lower rebellion, such as Shengyang Yiwei Tang and Xiao Banxia Tang, while the Western drugs used are mostly the classic antiemetic drugs mentioned above. In a study on gastrointestinal reactions during chemotherapy in patients with lung cancer [31], warming needle moxibustion combined with Shengyang Yiwei Tang was added on the basis of conventional Western drugs in the control group. At the fourth chemotherapy session, the incidence of gastrointestinal reactions such as nausea, vomiting, diarrhea, and constipation, as well as other adverse reactions, in the treatment group was lower than that in the control group, $P<0.05$. The levels of CD3+, CD4+, CD8+, and CD4+/CD8+, as well as quality-of-life scores, were superior to those in the control group and to those before chemotherapy, $P<0.05$. The trial confirmed that intervention with integrated Chinese and Western medicine can effectively alleviate patients' gastrointestinal reactions, reduce the risk of adverse reactions, and also improve patients' quality of life and immune function. He Limei [32] applied Xiao Banxia Tang plus moxibustion combined with tropisetron versus tropisetron alone in the treatment of gastrointestinal reactions to chemotherapy for lung cancer; there was no difference in efficacy on day 1, but on days 2 to 5 the treatment group was superior to the control group ($P<0.05$, $P<0.01$). Liang Weibing et al. [33] used Sanhong Yiqi Tang combined with ginger-partitioned moxibustion at bilateral Zusanli to prevent and treat bone marrow suppression and gastrointestinal reactions after chemotherapy for colorectal cancer, and found that the degree of reaction in the treatment group was significantly lower than that in the control group, $P<0.05$, and that the method is simple to perform, economical, free of adverse reactions, and worthy of application and promotion. Li Hengzhen [34], on the basis of tropisetron, metoclopramide, and dexamethasone sodium phosphate, applied moxibustion at bilateral Zusanli, bilateral Neiguan, and Zhongwan to regulate the spleen and stomach, and observed gastrointestinal symptom scores. It was found that moxibustion at Zusanli and other acupoints can effectively prevent and treat nausea and vomiting after chemotherapy for advanced gastric cancer, and can also improve other gastrointestinal-related symptoms in patients, alleviate the decrease in white blood cells caused by chemotherapy, and produce no side effects.

5.3 Acupuncture-Moxibustion Combined with Chinese Herbal Acupoint Application

Acupoint application, as the name implies, is a method of applying medication to acupoints to treat disease through the dual effects of the medication and the acupoints. Clinically, it is widely used because of its simple operation, convenience, and safety. Acupuncture-moxibustion combined with Chinese herbal acupoint application may include warming needle combined with Chinese herbal acupoint application, moxibustion combined with Chinese herbal acupoint application, and acupuncture combined with Chinese herbal acupoint application, among others. Wei Liuhong et al. [35] studied 110 patients receiving adjuvant chemotherapy after breast cancer surgery and found that warming needle combined with acupoint application and medication was

superior to Western medicine alone in terms of nausea and vomiting symptom scores and serum 5-hydroxytryptamine levels. Hong Wei et al. [36] divided 500 patients with chemotherapy-induced vomiting due to breast cancer into 2 groups. The control group was treated with tropisetron combined with acupoint application (Evodiae Fructus 10 g, ginger-processed Pinelliae Rhizoma 3 g, and Amomi Fructus 3 g ground into powder, mixed with an appropriate amount of ginger juice and honey to form a paste, applied at Zhongwan, Zusanli, and Neiguan), while the experimental group received, on the basis of the control group, gentle moxibustion (acupoints: Zusanli, Zhongwan, Guanyuan, and Qihai) and salt-partitioned moxibustion (at the umbilicus). Compared with the control group, the observation group had a lower incidence of nausea and vomiting and a milder degree of nausea and vomiting; the incidence of nausea and vomiting was 10.40%, significantly lower than the 17.60% of the control group, and the post-treatment levels of pepsinogen I and pepsinogen II (PG I, PG II) were lower, being (83.41 ± 10.53) $\mu\text{g/L}$ and (13.49 ± 1.35) $\mu\text{g/L}$ in the observation group versus (101.35 ± 11.77) $\mu\text{g/L}$ and (15.21 ± 1.89) $\mu\text{g/L}$ in the control group, while the scores in all dimensions of the Generic Quality of Life Inventory-74 (GQOLI-74) were higher ($P<0.05$). Yao Bei [37] added press-tack needle embedding combined with Zhitu San acupoint application on the basis of conventional Western drugs for the treatment of nausea and vomiting after chemotherapy for non-small cell lung cancer. The total clinical efficacy rate of the treatment group was 88.2%, higher than the 67.6% of the control group ($P<0.05$), suggesting that this treatment helps improve patients' quality of life after chemotherapy.

5.4 Acupoint Injection

Acupoint injection is the injection of small doses of Chinese and Western medications into acupoints, combining acupuncture stimulation, acupoint effects, and drug properties to prevent and treat disease. The medications selected for acupoint injection are often primarily Western drugs, including vitamin B6, vitamin B12, and metoclopramide, with Zusanli being the commonly used acupoint. A meta-analysis of the efficacy of acupoint injection of metoclopramide at Zusanli in preventing and treating nausea and vomiting caused by chemotherapy for malignant tumors [38] suggested that the total effective rate of acupoint injection of metoclopramide combined with 5-HT3 receptor antagonists in preventing and treating chemotherapy-induced nausea and vomiting was superior to that of 5-HT3 receptor antagonists alone, with a statistically significant difference [pooled RR (fixed-effect model)=6.59, 95% confidence interval (3.53, 12.28), $Z=5.93$, $P<0.01$]. In addition, acupoint injection can also be combined with Chinese herbal acupoint application, Chinese herbal decoctions, and the like. Liu Jie's observation [39] showed that, on the basis of dexamethasone plus palonosetron, the use of acupoint injection of vitamin B6 combined with Chinese herbal acupoint application to improve vomiting after IA chemotherapy regimen (idarubicin plus cytarabine) in patients with acute myeloid leukemia could reduce the incidence and severity of nausea and vomiting, and was superior to either therapy alone. Wang Fang [40] used Banxia Xiexin Tang combined with acupoint injection at Zusanli to prevent and treat vomiting after chemotherapy for lung cancer. The results showed that the

effective rate of no vomiting and 1 to 2 episodes of vomiting per day after chemotherapy in the treatment group was 100%, significantly higher than the 84.78% in the control group. Li Zhijin [41] used oral Xuanfu Daizhe Tang combined with acupoint injection of Huangqi Injection at Zusanli to improve vomiting after chemotherapy. The effective control rates of acute-phase vomiting in the control group and treatment group were 72.2% and 83.3%, respectively, and the effective control rates of delayed-phase vomiting were 61.1% and 75.0%, respectively, both higher than those in the control group, with statistically significant differences ($P < 0.05$).

6. Analysis of the Mechanisms of Acupuncture Combined with Medication in Intervening in CINV

Studies on the mechanisms by which Acupuncture Combined with Medication improves CINV are currently relatively few. According to previous studies, the mechanisms by which Acupuncture Combined with Medication improves CINV may involve regulating neurotransmitters, promoting the repair of gastrointestinal mucosal injury, regulating gastrointestinal hormone levels, promoting gastrointestinal peristalsis, and inhibiting the chemoreceptor trigger zone and the vomiting center.

Chemotherapeutic drugs and their metabolites can stimulate the gastrointestinal mucosa, or act on other sites through the bloodstream, to promote the release of neurotransmitters such as 5-hydroxytryptamine, substance P, acetylcholine, and NK-1 receptor, among others. These neurotransmitters bind to corresponding receptors to generate nerve impulses that are transmitted to the vomiting center, resulting in vomiting [42]. Yuan Yifei's study [43] showed that, compared with the model group, acupuncture followed by acupoint application produced a significant effect in improving gastrointestinal adverse reactions in cisplatin chemotherapy model rats, and its mechanism was related to acupuncture combined with acupoint application inhibiting the levels of the excitatory neurotransmitters 5-HT₃R and AChE in gastrointestinal tissues and increasing the level of the inhibitory neurotransmitter NOS. Yu Dongdong et al.'s study [44] showed that, in rats with tumors treated with cisplatin chemotherapy, acupuncture and moxibustion were used, and the experimental data indicated that acupuncture and moxibustion could reduce the 5-hydroxytryptamine content in the rat stomach and increase the nitric oxide synthase content. This suggests that acupuncture and moxibustion improve gastrointestinal reactions after chemotherapy mainly by stimulating acupoints to regulate mutually antagonistic neurotransmitters.

Serum motilin (MTL), as an important gastrointestinal hormone that initiates the migrating motor complex (MMC) during the interdigestive period, can trigger strong gastric contractions, increase small intestinal peristalsis, and promote gastrointestinal emptying. Gastrin (GAS) is secreted by G cells in the gastric antrum, duodenum, and jejunum, and can enhance gastrointestinal motility, promote gastric acid secretion, and strengthen digestive capacity. Yang Jinliang et al. [45], in exploring the possible mechanisms of Pingwei San combined with the Three Stomach Needles in treating vomiting after chemotherapy for tumors, found that serum

MTL was significantly elevated and substance P levels were significantly decreased in the Acupuncture Combined with Medication group, far lower than those in the granisetron group. Sun Xuliang reported [46] that acupuncture combined with aprepitant could upregulate serum MTL levels and downregulate serum GAS levels in patients with vomiting after chemotherapy, regulating gastrointestinal hormone levels and reducing the incidence of vomiting.

In addition, some studies have found [47] that pituitary β -endorphin and adrenocorticotrophic hormone can be secreted under acupuncture stimulation, acting on the chemoreceptor trigger zone (CTZ) and the vomiting center to reduce the occurrence of vomiting.

7. Conclusion

As one of the major adverse reactions caused by chemotherapy, CINV affects patients' treatment process and physical and mental health. Chemotherapeutic drugs are drug toxins that can lead to deficiency of healthy qi and disharmony of the Zang-Fu Organs. In addition, tumor patients themselves already have spleen-stomach deficiency or prolonged illness with bodily weakness, so that the middle jiao stomach qi is depleted even more severely. When the spleen and stomach are weak, the Zang-Fu Organs, meridians, and collaterals lose their nourishment, and the ascending and descending movements of the spleen and stomach become abnormal; clear yang fails to ascend, turbid yin fails to descend, and when qi rebels upward, vomiting occurs, presenting as nausea and vomiting. Guiding the treatment of CINV with Acupuncture Combined with Medication based on the theory of "Stomach Deficiency with Simultaneous Disease of the Zang-Fu Organs, Meridians, and Collaterals" can achieve the effects of fortifying the spleen and harmonizing the stomach, and supporting healthy qi and eliminating pathogenic factors, restore the physiological functions of the spleen and stomach, and enhance the body's ability to resist drug pathogens. Compared with a single treatment modality, it possesses unique clinical advantages and application value, and has now been widely applied and recognized in clinical practice, with abundant clinical research findings accumulated. Through collecting literature and data, the author found that Acupuncture Combined with Medication in the treatment of CINV mainly consists of Acupuncture combined with medication, Acupuncture-moxibustion combined with medication, Acupuncture-moxibustion combined with Chinese herbal acupoint application, and Acupoint injection. However, the traditional Chinese medicine treatments used lack corresponding pattern differentiation, and the evaluation of therapeutic effects is mostly limited to improvements in nausea and vomiting symptoms, traditional Chinese medicine syndrome scores, and quality-of-life scores, with relatively few studies on deeper mechanisms of action, thus presenting certain limitations. In the future, research design should be optimized, and multicenter, large-sample randomized controlled trials should be carried out to further study the mechanisms of action, to investigate the independent efficacy of acupuncture and medication within Acupuncture Combined with Medication, the synergistic efficacy of the combination, and the effects on pharmacokinetics, to perfect the efficacy evaluation system, and to incorporate modern detection techniques and objective evaluation indicators,

breaking through the current limitation of clinical research relying solely on symptom scores. By combining gastrointestinal motility testing and changes in inflammatory factors, neurotransmitters, and immune indicators, the core molecular mechanisms by which Acupuncture Combined with Medication regulates CINV can be elucidated from multiple angles, so as to comprehensively, scientifically, and objectively evaluate the therapeutic effects of Acupuncture Combined with Medication on CINV. In addition, more in-depth experimental research should be carried out to corroborate the clinical synergistic efficacy from the level of basic experiments, to perfect the experimental evidence system for Acupuncture Combined with Medication in preventing and treating CINV, and to provide solid theoretical and experimental support for this therapeutic approach.

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