

Exploration on the Diagnosis and Treatment Approach for Advanced Esophageal Cancer based on the TCM Theory of “Gate of Vitality”

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Abstract: *Esophageal cancer is one of the most malignant cancers, with patients in advanced stages experiencing a significantly poor quality of life. Traditional Chinese Medicine identifies its pathogenesis as a condition of root deficiency and excess manifestations, closely related to the insufficiency of the innate “water and fire of the Gate of Vitality,” often accompanied by symptoms such as qi stagnation, phlegm coagulation, and blood stasis. Based on the theory of the “Gate of Vitality,” this paper explores the pathological characteristics of advanced esophageal cancer and proposes the application of *Rehmannia Glutinosa* to “seek yang from yin and vigorously tonify the Gate of Vitality,” aiming to provide insights for clinical treatment.*

Keywords: Advanced esophageal cancer, Theory of Gate of Vitality, Water and fire of the Gate of Vitality, *Rehmannia Glutinosa*.

1. Introduction

Esophageal cancer (EC) is the eighth most commonly diagnosed malignant tumor globally and the sixth leading cause of cancer-related deaths [1]. EC primarily consists of two subtypes: squamous cell carcinoma and adenocarcinoma. Among these, esophageal squamous cell carcinoma (ESCC) is the most prevalent type worldwide. Which accounting for approximately 85% of all cases [2]. China contributes to over 53% of newly diagnosed EC patients globally. The median survival period ranges from 13 to 19 months, with a five-year survival rate of only 10.0% to 30.0% [3, 4]. Despite advancements in surgical techniques, reduced perioperative mortality rates, and the introduction of multimodal treatments, EC remains one of the most challenging malignancies [5].

The treatment of esophageal cancer (EC) depends on its etiology, pathological type, and stage. For mucosal cancer, the standard treatment options include endoscopic mucosal resection and endoscopic submucosal dissection. For patients with locally advanced disease, esophagectomy remains the primary approach. In cases of more advanced tumor progression, neoadjuvant chemotherapy or chemoradiotherapy may be incorporated [4, 5]. The advantage of neoadjuvant chemotherapy for esophageal cancer lies in its ability to downstage the tumor preoperatively and reduce the risk of distant metastasis. Current guidelines recommend systemic chemotherapy regimens based on cisplatin and 5-fluorouracil [4, 6]. Although significant progress has been made in multimodal therapy for EC over recent decades, patient prognosis remains poor. For advanced-stage patients, palliative and symptomatic treatment is still the mainstay. Traditional Chinese Medicine (TCM) can offer relatively effective treatment options for patients with advanced esophageal cancer, providing unique advantages in regulating the tumor microenvironment, improving quality of life, and extending survival [7]. Based on the TCM theory of the “Gate of Vitality,” the fundamental pathogenesis of esophageal cancer is attributed to congenital deficiency, decline of the life-gate fire, and subsequent stagnation of qi and blood in the

esophagus, which leads to cancer formation. This process is closely related to the liver, spleen, and kidneys [8]. Building on Western medical staging and treatment approaches, this discussion explores how vigorously tonifying the water and fire of the Gate of Vitality, along with regulating qi and descending counterflow, can improve the quality of life for patients with advanced esophageal cancer, aiming to provide clinical diagnostic and therapeutic insights.

2. A Brief Overview of the Theory of the Gate of Vitality

The term “Gate of Vitality” first appeared in the *Lingshu • Genjie*. Its crucial importance in the human body was documented early in the *Nan Jing*: “The Gate of Vitality is the dwelling place of all the spirits and essences, and the foundation of the primordial qi.” This indicates that the Gate of Vitality is the shared residence of the innate spirit, primordial essence, and primordial qi. The primordial essence refers to the innate essence, which plays a vital role in generating the postnatal physical form. The Ming dynasty physician Sun Yikui similarly held this view: “The Gate of Vitality is the dynamic qi of the two kidneys; it is neither water nor fire but the pivot of creation and transformation.” Here, “creation and transformation” refers to the generation and nurturing of the human body’s five zang organs, six fu organs, tendons, vessels, flesh, skin, and bones. Another relevant record is found in the *Inner Canon • Liu Wei Zhi Da Lun*: “The birth of all things follows transformation through the Gate of Vitality,” which similarly reflects the important role of the Gate of Vitality in the formation of tangible substances in the human body [9].

In addition to its role in “creation and transformation,” the Gate of Vitality also plays a key role in transportation, transformation, and governance. Chen Shiduo’s *Waijing Weiyang* states, “The postnatal fire within the twelve meridians cannot transform without the prenatal fire. The Gate of Vitality resides within water and fire, where water and fire mutually support each other, providing an inexhaustible

source.” This reveals that the prenatal qi stored in the Gate of Vitality governs and directs the functions of all the zang-fu organs, promotes the ascent, descent, and circulation of qi, blood, and body fluids, and maintains the coordination of organ functions [10]. The qi movement of all the five zang and six fu organs is related to the Gate of Vitality, relying on it as the foundation. When the fire of the Gate of Vitality is harmonious and vigorous, qi, blood, and body fluids flow smoothly and unobstructed, nourishing the body’s defensive qi and ensuring that righteous qi remains internally, preventing pathogenic factors from invading. The concept of the Gate of Vitality encompasses the meanings of both water and fire, corresponding to its two major functions: it includes the foundation for the generation of substances and the basis for functional activities.

The Inner Canon states: “Water and fire are the manifestations of yin and yang; yin and yang... are the guiding principles of all things, the parents of transformation, and the abode of spirit. In treating disease, one must seek the root reason.” Thus, water and fire can also represent the meanings of yin and yang. When yin and yang in the human body are in harmony and the spirit is in its proper state, it is possible to transform and produce refined substances to nourish the zang-fu organs and meridians [11].

Pathological manifestations related to the Gate of Vitality are more commonly seen as deficiency patterns, which are closely linked to the “primordial qi,” the fundamental qi of the human body. The innate reproductive essence coalesces and combines to form the initial human embryo, known as the innate essence. This essence can transform into qi, which is the primordial qi within the embryo. Primordial qi has the function of stimulating the body’s activities, development, and metabolism. The Nan Jing states: “The dynamic qi between the kidneys is the source of life-generating qi,” and the Gate of Vitality is the foundation that sustains the continuous generation of primordial qi. Therefore, the innate foundation is actually the Gate of Vitality, which serves as the human body’s congenital root. Thus, the Gate of Vitality is often feared deficiency, leading to the prevalence of deficiency patterns in disorders of the Gate of Vitality. The prolonged and consuming nature of malignant diseases inevitably results in deficiency patterns. Even if there are signs of excess, one should consider the pattern differentiation of true deficiency with false excess. Long-term imbalance and severe depletion of true yin and true yang will ultimately exhaust the: essence, energy and spirit. The Gate of Vitality governs the root of the twelve meridians. When the fire of the Gate of Vitality declines, the circulation of all twelve meridians becomes impaired. If qi and blood cannot flow smoothly to nourish the meridians, various diseases will arise [12]. The balance of ascent, descent, and transformation of the fire of the Gate of Vitality within the body is its core source and driving force [13]. The fundamental pathogenesis of long-term cancer involves dysfunction of the zang-fu organs, damage to true yin and true yang, and decline of righteous qi. This pathogenesis is related to the Gate of Vitality Theory.

3. Analyzing the Etiology and Pathogenesis of Advanced Esophageal Cancer from the Perspective of Gate of Vitality Theory

MC attributes the causes of esophageal cancer to factors such as a history of gastroesophageal reflux disease, Barrett’s esophagus, long-term consumption of hot foods and beverages, genetic factors, and smoking, though the exact etiology remains unclear. From the perspective of TCM, this disease falls under the category of “ye ge” (dysphagia and obstruction). Its causative factors include improper diet, emotional factors, qi stagnation and blood stasis, and congenital deficiency. Most TCM practitioners consider the primary pathological products to be stagnation, phlegm, heat, and stasis, with the pathogenesis characterized by a root deficiency and excess manifestations [14, 15, 16]. Among these, the Western medical concept of genetic factors aligns closely with the TCM theories of congenital constitution and the Gate of Vitality, particularly the notions of “Gate of Vitality” and “primordial qi,” both of which are associated with congenital deficiency. On the other hand, most patients with advanced esophageal cancer have a prolonged medical history. The TCM principles of “prolonged illness affecting the kidneys” and “prolonged illness leading to stasis” are also important bases for pattern differentiation in this disease.

Therefore, based on the “Gate of Vitality theory,” advanced esophageal cancer is considered to arise from a deficiency of the fire of the Gate of Vitality and insufficient transformative capacity. This is compounded by dysfunction in the postnatal spleen and kidneys in transformation and transportation, leading to the inability of qi, blood, and body fluids to reach the affected area, nourish the meridians, and enable the body’s vital qi to combat pathogenic factors, ultimately resulting in the accumulation of cancerous toxins over time. Prolonged retention of pathogenic factors leads to internal invasion, disrupting the balance of yin and yang. Yang damage affects yin, and repeated unresolved conditions lead to dual deficiency of yin and yang. Consumption of the fire of the Gate of Vitality manifests as emaciation and fatigue. This mechanism shares similarities with fatigue symptoms caused by other types of cancer. Imbalance of yin and yang and impaired transportation of qi, blood, and body fluids allow pathogenic factors and abnormal substances to exploit local nutrients for malignant growth, often compressing meridians and organ tissues after proliferation, thereby damaging the normal functions of the organs. The Yi Guan states: “When the fire of the Gate of Vitality is strong, vitality flourishes; when it declines, the body becomes weak and susceptible to illness. The kidneys store essence and are closely related to the Gate of Vitality.” Furthermore, Chen Xincheng, Zhao Dihua, Shao Nianfang, and others have described correlations between the TCM “Gate of Vitality theory” and the physiological functions of the kidneys in Western medicine. They propose that the Gate of Vitality is similar to the adrenal cortex and the hypothalamic-pituitary-adrenal cortical system in function, suggesting that the material basis of the Gate of Vitality is cyclic nucleotides [17]. The fundamental source of continuous human vitality lies in the vigorous water and fire of between the kidneys. Pathogenic factors tend to damage the physiological functions of the kidneys, highlighting the importance of not neglecting the kidneys when reinforcing the root and cultivating primordial qi.

4. Treatment of Advanced Esophageal Cancer Based on the Theory of the Gate of Vitality

There is currently no unified consensus among modern medical practitioners regarding the pattern differentiation and treatment of advanced esophageal cancer. Based on the theory of insufficient water and fire of the Gate of Vitality combined with qi stagnation and blood stasis in advanced esophageal cancer, it is believed that treatment should involve supplementing the water and fire of the Gate of Vitality while also incorporating herbs that activate blood and regulate qi. The NanJing states: “The Gate of Vitality... its qi communicates with the kidneys” [18]. This indicates that the left kidney and the right Gate of Vitality are interconnected and communicate with each other. Therefore, when supplementing the fire of the Gate of Vitality, the kidneys serve as the foundation to balance yin and yang and cultivate vital qi. Physicians such as Sun Yikui and Zhao Xianke regarded the kidneys and the Gate of Vitality collectively as the “house of water and fire” and the “dwelling of yin and yang” [19]. This guides the understanding that the kidneys and the Gate of Vitality share a common origin, and thus, tonifying the organs should focus on the kidneys. When the fire of the Gate of Vitality in the kidneys is vigorous, qi and blood circulate with strength, body fluids are distributed smoothly, and righteous qi can reach the esophageal area to combat pathogenic factors.

Another key treatment principle is skillfully “seeking yang from within yin and supplementing from within water,” based on the concept of “yin and yang being mutually rooted and interdependent.” This involves tonifying the yin of the Gate of Vitality to generate yang [20]. Zhao Xianke, in his work *Yi Guan*, noted: “The sovereign fire of the Gate of Vitality is a fire within water; they rely on each other and are never separated.” This guides the approach that tonifying the water and fire of the Gate of Vitality should not be overly aggressive; instead, one should “nourish the Gate of Vitality” and “warmly tonify the Gate of Vitality” by supplementing from within “water.” The water and fire of the Gate of Vitality belong to true yin and true yang, which are mutually rooted and interdependent [21]. Those skilled in supplementing yang must seek yang from within yin, and those skilled in supplementing yin must seek yin from within yang [22, 23]. Although humans are born from fire, they are nourished by water. The formless fire and formless water interact and are stored within each other, nourishing true yin and generating true yang, thereby tonifying the vital qi of the Gate of Vitality and ensuring the smooth flow of the meridians to prevent the recurrence of malignant diseases.

Zhang Jingyue, a master in the application of the Gate of Vitality theory in medicine, carefully examined the formulas he created. It is evident that he was skilled in using the key medicinal herb “Prepared Rehmannia Root” to “greatly tonify kidney water, replenish marrow, and benefit true yin,” achieving the principle that “all those who wish to treat disease must prioritize the physical body, and all those who wish to treat the body must prioritize essence and blood” [24, 25]. Based on this, later physicians such as Zhao Xianke and Xue Ji used large doses of Rehmannia Glutinosain formulations like Liuwei Dihuang Soup combined with *Ophiopogon japonicus* and *Schisandra chinensis*, as well as Guifu Dihuang pill, to treat various malignant diseases [26]. Subsequently, some medical practitioners have achieved favorable therapeutic outcomes in treating malignant pleural

effusions based on the Gate of Vitality theory [26, 27].

In summary, drawing on the clinical applications of the Gate of Vitality theory by ancient medical sages, applying this theory to advanced esophageal cancer—specifically by incorporating large doses of Rehmannia Glutinosain formulations based on pattern differentiation—has yielded positive results in alleviating patients’ quality of life and extending survival periods.

5. Typical Case

Patient: Liu XX, male, 82 years old, from Qinghai. First consultation date: March 2, 2023. Chief Complaint: Diagnosis of esophageal cancer with multiple metastases for over one month. History of Present Illness: In February 2023, the patient experienced dysphagia without an obvious cause. On February 6, 2023, a PET-CT scan at an external hospital revealed: uneven thickening of the esophageal wall at the upper esophagus, approximately at the level of the 5th to 7th thoracic vertebrae, suggestive of malignant esophageal tumor; metastases in the mediastinum, bilateral pulmonary hilar regions, behind the pancreatic head; and left adrenal gland metastasis. On February 14, 2023, a pathology report from an external hospital indicated: (Esophagus, 28-32 cm from the incisors) poorly differentiated esophageal squamous cell carcinoma, with tumor invasion into the muscularis propria; upper and lower resection margins were free of tumor. Right recurrent laryngeal lymph node: 1 out of 3 nodes were positive for metastasis. Immunohistochemistry: HCK(+), P63 focal(+), P40 focal(+), CK(+), D2-40 suggestive of vascular invasion, S-100 not suggestive of vascular invasion, Ki67 approximately 70%. On February 28, 2023, gastroscopy at an external hospital showed: malignant esophageal tumor, reflux esophagitis, chronic atrophic gastritis with erosion. The patient and family refused Western medical radiotherapy and chemotherapy and sought Traditional Chinese Medicine treatment. Current Symptoms: Dysphagia, discomfort in the right upper abdomen, occasional hiccups, normal bowel movements, nocturia 3-4 times, occasional thirsty at night. Tongue: dark red with a black coating. Pulse: deep and wiry. TCM Diagnosis: Ye Ge; Pattern of Gate of Vitality Fire Decline with Phlegm-Qi Stasis and Obstruction. Western Medicine Diagnosis: Malignant Tumor of the Esophagus (Stage IV) (AJCC Staging: pT2N1Mx). Treatment Principle: Drastically tonify the yin and yang of the Gate of Vitality, consolidate the root and cultivate primordial qi, supplemented by nourishing qi and blood, resolving phlegm and dispersing nodules, nourishing yin, and descending counterflow. Prescription: Modified Xuanfu Daizhe Soup combined with Shenzhe Peiqi Soup. Formula: Codonopsis Radix 30g, calcined Haematitum 12g, Pinelliae Rhizoma Praeparatum cum Zingibere 12g, Cistanches Herba (wine-processed) 30g, Clematidis Radix 9g, Epimedii Herba (honey-fried) 12g, Curculiginis Rhizoma 6g, Rehmanniae Radix Praeparata 60g, Dioscoreae Rhizoma (bran-fried) 30g, Corni Fructus (wine-processed) 20g, Psoraleae Fructus (salt-processed) 12g, Drynariae Rhizoma (processed) 12g, Lycii Fructus 30g, Cuscutae Semen (salt-processed) 15g, Inulae Flos 9g, Zingiberis Rhizoma 9g, Aspongopus 9g, Galli Gigerii Endothelium Corneum (stir-fried) 15g, Broussonetiae Fructus 10g, Corydalis Rhizoma (vinegar-processed) 15g. Dosage: 7 doses.

Following this, the patient attended regular follow-up outpatient visits. By the fourth consultation, symptoms included: no obvious acid reflux, and bowel movements were acceptable. The dosage of *Rehmannia Radix Praeparata*, the key medicinal herb for supplementing the Gate of Vitality, was increased to 90g. By the fifth consultation, the patient's condition had stabilized compared to before, with no significant diarrhea or loose stools. The dosage of *Rehmannia Radix Praeparata* was further increased to 120g and maintained at this level thereafter, while other herbs were adjusted symptomatically. At the seventh consultation: dysphagia had improved compared to earlier visits, with nocturia occurring 3-4 times per night. Tongue presentation: pale and dark with a white, thick, greasy coating. Pulse: wiry and slightly large. Re-examination showed no significant tumor progression. The therapeutic efficacy is considered relatively favorable.

Note: The patient presented with a confirmed diagnosis of esophageal cancer at the initial consultation. As an elderly male with advanced-stage disease, the prognosis is extremely poor. The disease is considered to stem from congenital deficiency. With advancing age, the fire of the Gate of Vitality becomes insufficient. Exposure to external pathogens, combined with phlegm toxins or cancer toxins accumulating and stagnating in the esophageal region, leads to cancer formation. Tangible and intangible phlegm congeal together in the esophagus. Deficiency of the Gate of Vitality fire and insufficient transformative capacity, coupled with the inability of body fluids and vital qi to combat pathogens, results in deficiency of vital qi and disruption in the ascent and descent of qi movement. This manifests as difficulty swallowing, hiccups, and abdominal qi stagnation. When cancer toxins penetrate internally, a black tongue coating and a deep, wiry pulse appear. Therefore, the pattern differentiation is Gate of Vitality fire decline combined with phlegm-qi obstruction syndrome. The treatment principle focused on drastically tonifying the yin and yang of the Gate of Vitality, consolidating the root and cultivating primordial qi, supplemented by nourishing qi and blood, and nourishing yin to descend counterflow. The prescription used was *Shenzhe Peiqi Tang*, removing the cold-natured herbs *Anemarrhena* and *Tiandong Asparagus* to preserve its effects of descending counterflow and relieving obstruction. It was combined with the "three tonics", along with salt-processed *Psoralea*, *Drynariae Rhizoma* (processed), *Lycii Fructus*, *Cuscutae Semen* (salt-processed), and dried ginger to warm yang and supplement the fire of the Gate of Vitality. Specifically, prepared *Rehmannia Glutinosa* 60g was used to tonify the deficient fire of the Gate of Vitality. Additionally, *Inula flower* was included to direct qi downward and resolve phlegm; *Gallus gallus domesticus endothelium* and *Aspongopus* to harmonize the stomach and resolve accumulation; and *Corydalis* (vinegar-processed) and *Broussonetia fruit* to regulate the liver and benefit the marrow. Zhang Jingyue, known as "Master Shudihuang," stated: "For treating kidney yang deficiency and Gate of Vitality fire decline, heavily use Shudihuang to cultivate the insufficient primordial yang within the kidneys." Based on the teacher's experience, gradually increasing the dosage of *Rehmannia Glutinosa* has shown significant efficacy in treating malignant pleural effusion [26, 27]. Therefore, during the patient's fourth and fifth consultations, as symptoms stabilized

compared to before, the dosage of *Rehmannia Glutinosa* was gradually increased to 120g and maintained. By the seventh consultation, re-examination showed no significant tumor progression. A CT scan from an external hospital on June 9, 2023, compared with May 4, 2023, indicated: A mass in the mid-esophagus remained largely unchanged. Multiple pulmonary nodules showed no significant change (largest approximately 1.3*0.9 cm). Multiple enlarged lymph nodes in the mediastinum, some tending toward calcification, showed no significant change.

6. Conclusion

The prognosis for advanced esophageal cancer is extremely poor. Western medicine primarily focuses on palliative and symptomatic treatment, which is often poorly tolerated by patients, whereas TCM treatment is more readily accepted. Based on the TCM theory of the "Gate of Vitality," the pathological products in advanced esophageal cancer, such as stagnation, phlegm, heat, and stasis, are all closely related to the decline of Gate of Vitality fire. Beyond symptomatic treatment, the fundamental treatment principles involve drastically tonifying the yin and yang of the Gate of Vitality, consolidating the root and cultivating primordial qi, nourishing blood and moistening dryness, and supplementing qi and warming yang. These are combined with methods to activate blood, promote qi movement, and disperse nodules. Drawing on Zhang Jingyue's application of *Rehmannia Glutinosa* and using a large dose of *Rehmannia Glutinosa* as the sovereign herb, supplemented with corresponding formulas to tonify the water and fire of the Gate of Vitality, and modified according to pattern differentiation, favorable clinical efficacy has been achieved.

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