

“Treating Poison with Poison” for Gynecological Tumors: Mechanisms and Clinical Applications

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Abstract:

This article aims to explore the application value and research progress of the “treating poison with poison” therapy in traditional Chinese medicine (TCM) in the treatment of gynecological tumors. The incidence rate of gynecological tumors continues to rise globally and in China. Although conventional Western medicine treatment has made some progress, it still faces challenges such as significant side effects, drug resistance, and high recurrence rates. The TCM “treating poison with poison” therapy utilizes toxic Chinese herbs to inhibit tumor cells and enhance immune function, and has demonstrated unique advantages in reducing the adverse reactions of radiotherapy and chemotherapy. This article systematically reviews the commonly used Chinese herbs, treatment schemes, and clinical efficacy of this therapy, pointing out that it has clear anticancer mechanisms in inducing apoptosis and inhibiting angiogenesis. However, it also has limitations such as significant toxic reactions, incomplete understanding of the mechanism of action, and insufficient clinical evidence. Future research should combine modern technologies to deeply analyze its pharmacodynamic and pharmacokinetic characteristics, optimize the formulation process to improve targeting, and verify its safety and efficacy through rigorously designed clinical trials.

Keywords: Treating poison with poison; gynecological tumors; toxic Chinese herbs; anticancer mechanism.

1. Introduction

In recent years, the incidence of gynecological cancers has been continuously rising worldwide, posing a serious threat to women’s health, such as ovarian cancer(OC), endometrial cancer(EC) and cervical cancer (CC). According to the data from the World

Health Organization (WHO) in 2022, there are approximately 600,000 new cases of cervical cancer worldwide each year, with about 350,000 deaths. Among them, over 94% occur in low-income and middle-income countries [1]. As a populous country, China has a similar incidence and mortality rate for

gynecological cancers. According to the latest survey data released by the Chinese Cancer Association in 2022, the incidence of gynecological tumors in China has been continuously increasing; among them, the annual number of new cases of OC is approximately 57,200, and the number of deaths is 27,200; the new cases of CC are 119,300, and the annual number of deaths is approximately 37,200; the new cases of uterine CC are 71,100, and the number of deaths is about 17,100 [2].

Although western medicine (WM) has made significant progress in surgeries, chemotherapy, and radiotherapy, problems such as severe side effects, strong drug resistance, and high recurrence rates still pose challenges to clinical treatment. Traditional Chinese Medicine (TCM), as the accumulated medical wisdom of the Chinese nation over thousands of years, has formed a systematic and unique theoretical system in the prevention and treatment of gynecological diseases. Combined with WM treatment plans, TCM has accumulated experience in treating gynecological cancers. In particular, the “using poison to counter poison” therapy of TCM, which aims to inhibit tumor cells and enhance immune function, and alleviate the side effects of radiotherapy and chemotherapy, shows unique advantages. “Using poison to counter poison” is a method in TCM that uses strong medicinal properties to attack and eliminate pathogenic factors, achieving the purpose of treatment. It often uses TCM with toxicity or strong medicinal properties to directly kill or inhibit tumor cells [3]. This study intends to take the theme of “Exploring the Therapeutic Effect of TCM’s ‘Using Poison to Counter Poison’ on Gynecological Cancers” to explore its clinical efficacy, mechanism of action, and prospects.

This article focuses on the “using poison to counter poison” approach in the treatment of gynecological tumors, summarizing the commonly used TCM, treatment plans, and their effects. The research objective of this article is to systematically evaluate the scientificity and practicability of the “using poison to counter poison” method in the treatment of gynecological cancers, clarify its treatment mechanism and applicable population, provide theoretical support for modern integrated Chinese and Western medicine cancer treatment, and promote the modern transformation and internationalization development of TCM in cancer treatment.

2. The Classic Chinese Medicine Theory of “Using Poisons to Attack Toxins” for the Treatment of Gynecological Tumors

2.1 The Meaning of “Attacking With Poison”

The “using poison to counter poison” therapy in TCM embodies the unique treatment methods of TCM. Its essence

lies in utilizing the toxic properties of drugs to eliminate pathological toxins. This therapeutic concept can be traced back to the discussion of “poison attacking evil” in the “Huangdi Neijing”, and its theoretical framework consists of three ideas:

The “using poison to counter poison” therapy in TCM embodies the unique treatment methods of TCM. Its essence lies in using the toxic properties of the drugs to eliminate pathological toxins. This treatment first, in terms of the concept of “poison”, not only represents the special characteristics of the drugs, but also refers to pathogenic factors such as “cancer toxins”; in terms of the mechanism of “attack”, it focuses on exerting the intense characteristics of the drugs to directly strike stubborn diseases, specifically manifested in multiple approaches such as breaking blood circulation, resolving toxins, and eliminating symptoms; moreover, in terms of the treatment concept, it emphasizes mobilizing the self-balancing ability of the patient’s body through the drug’s characteristics [3,4]. WM has continuously revealed its scientific connotations, such as the anti-angiogenesis effect of cantharidin and the mechanism of inducing tumor cell apoptosis by caltropine, providing modern scientific basis for the application of this traditional therapy in gynecological tumors, and demonstrating the unique advantages of combined treatment of TCM and WM [5].

2.2 The Correspondence between “Using Toxicity to Counteract Toxicity” and the Pathogenesis of Gynecological Tumors

From the perspective of the Chinese medical theory system, the therapeutic method of “using toxicity to counteract toxicity” has a profound internal connection with the pathological characteristics of gynecological tumors. In the WM concept, gynecological tumors include OC, EC, and CC. In the Chinese medical diagnostic system, they are mainly classified under the categories of “syndrome and accumulation” and “accumulation and congestion”. In the clinical practice of gynecological tumors, this therapy is highly consistent with the pathological characteristics of “internal accumulation of cancer toxins and mutual obstruction of phlegm and stasis”. In addition, regarding “toxicity” about the formation of gynecological tumors is often caused by long-term accumulation of pathogenic factors, such as external invasion of six evils and internal injury of seven emotions; Secondly, in terms of the “stagnant blood” pathogenesis, gynecological tumor patients often have stasis of qi and blood in the uterine cavity, forming hard masses and accumulations. Ordinary herbs cannot solve it, and toxic Chinese medicines need to be used to disperse the accumulation and relieve the symptoms. Zhang Zhongjing’s “Treatise on Febrile Diseases” even uses powerful formulas to treat stubborn diseases, such as DiDangTang, which contains herbal medicine of ShuiZhi to break blood and disperse stasis. The “using

toxicity to counteract toxicity” method of Chinese medicine makes use of the intense nature of toxic Chinese medicines to directly break cancer toxins, disperse stasis and disperse accumulation, thereby achieving the effect of “eliminating the pathogen and restoring the health of the body”.

2.3 Application of TCM in the Treatment of the Three Major Gynecological Cancers

Under the system of TCM syndrome differentiation and treatment, the three major malignant tumors in gynecology exhibit unique syndrome characteristics and treatment strategies. From the perspective of specific symptoms, OC has a basic pathogenesis of yang deficiency and cold coagulation, and the clinical manifestations are mostly cold toxin stagnation syndrome. The treatment should be to warm yang and dispel cold, detoxify and eliminate the lesion. The prescription selected is YangheTang modified, and the selected herbs include prepared FuZi, ChanChu, and LuJiaoJiao. Among them, the aconine-like components contained in prepared ZhiFuZi could regulate signal pathways to inhibit the proliferation of ovarian CC, and the calamine toxin ligand in calamine could activate the apoptotic pathway to induce cancer cell apoptosis. The two work together to enhance the anti-tumor effect [6,7]. For the syndrome of mutual accumulation of phlegm and toxin, it should be treated with eliminating phlegm and dispersing nodules. The prescription selected is HaisaoyuHutang combined with XiaojinWan, and the prescription containing ShengNanXing, LuSha, HaiZao is particularly suitable. The β -sitosterol in raw Aconite could block the NF- κ B signaling pathway to reduce the release of inflammatory factors, and the laminarin in Haizao could inhibit the transfer of cancer cells by blocking the pathway [7].

EC is mostly caused by the accumulation of damp-heat and stasis toxins within the body. For the damp-heat and toxin accumulation syndrome, modified Huanglian-JieduTang should be used. The oleanolic acid contained in BaiHuaSheSheCao could inhibit the growth of EC cells by down-regulating the STAT3 signaling pathway. The apigenin in Celastrol could inhibit the MAPK pathway and reduce tumor cell invasion. They exert the effects of clearing heat, eliminating dampness, and resisting tumors when they use together [8]. For the syndrome of stasis and toxins damaging the blood vessels, the ZhuYuZhiXueTang should be used. The hirudin from ShuiZhi could inhibit the activity of thrombin and improve the tumor microenvironment (TME). The chunqiu toxin protein from WuGong could activate the JNK pathway and promote cancer cell apoptosis, achieving the therapeutic effect of promoting blood circulation and eliminating toxins [9].

The pathogenesis of CC is mainly characterized by the infiltration of dampness and toxins. For the dampness-toxin infiltration syndrome, the selected treatment is WanDaiTang combined with ErmiaoWan. The YaDanZi

oil emulsion contained in the YaDanZi could inhibit the proliferation of CC cells by destroying the membrane structure of the cancer cells, and the KuShen alkaloid in KuShen flavesccens could regulate the Bcl-2/Bax apoptosis-related pathway to induce cancer cell death, exerting a diuretic and detoxifying effect [10]. For the syndrome of excessive heat toxins, the modified WuWeiXiaoDuYin is often selected. Among them, the alkaloids of ShanDouGen’s KuShen, such as berberine could inhibit the PI3K/Akt pathway and reduce tumor angiogenesis, the Australian solanine of LongKui could block the G2/M phase of the cell cycle, inhibiting the division of cancer cells and achieving the effects of clearing heat and detoxifying as well as fighting cancer. The research results of Zhang Linhui et al. further indicate that the above toxic TCM extracts have a significant inhibitory effect on the proliferation of CC cells in vitro, and could exert immune regulatory effects by enhancing the activity of immune cells [10]. The theory of “using poison to counter poison” proposed by the Qing Dynasty physician Ye Tianshi holds significant guiding value in the treatment of gynecological tumors. The medication principle he proposed, that “worm-based drugs move blood when there is blood and move qi when there is no blood”, provides a theoretical basis for the clinical selection of drugs such as TuBieChong and ShuiZhi that break up blood stasis and remove blood clots. Combined with worm-based drugs like ChuanShanJia that have the function of guiding and promoting the circulation of qi, a treatment strategy of “using strong drugs with caution” is formed. This strategy not only fully utilizes the efficacy of worm-based drugs in eliminating toxins and breaking up hard masses, but also avoids the risk of toxicity by precisely controlling the dosage and combining with tonifying drugs such as Huangqi and GanCao. This pattern of syndrome-based medication based on the concept of “using poison to counter poison” reflects the treatment wisdom of “reducing the dosage to a large extent” in TCM, providing unique ideas and methods for the treatment of gynecological malignant tumors.

3. WM’s Approach to Treating the Three Major Gynecological Cancers

Within the framework of WM, OC, EC, and CC, which are the three major gynecological malignancies threatening women’s health, have their treatment strategies strictly following the FIGO (International Federation of Gynecology and Obstetrics) staging principles. This has resulted in a stepped and individualized comprehensive intervention treatment.

The traditional treatment system for the three major gynecological cancers in WM is based on surgery, with chemotherapy as the core and targeted therapy as the breakthrough. It forms a multi-stage intervention treatment strategy. For early-stage ovarian cancer (I-II stage),

the treatment is mainly based on surgery, including total hysterectomy and bilateral adnexectomy, large omentum resection, and systematic lymph node dissection. In the middle and advanced stages (III-IV), it is emphasized that patients undergo tumor cell debridement surgery, with the goal of having the residual lesion diameter less than 1 cm. In cases where necessary, combined resection of organs such as the intestine or spleen may also be performed [7]. For patients with EC, a total hysterectomy and removal of the ovaries and adnexa, and lymph node dissection are performed in the early stage. In the advanced stage, tumor eradication surgery is required. However, the surgery may lead to pelvic floor dysfunction; radiotherapy can cause radiation-induced colitis; chemotherapy may have toxic effects such as bone marrow suppression. Although WM treatment for gynecological cancers is relatively comprehensive, Tang's research shows that patients with EC have poor prognosis after surgery and need to be treated with TCM in combination [9]. For instance, for patients with cervical cancer who have symptoms of dampness toxicity descending to the lower body along with pelvic pain and abnormal discharge, clinical treatment can combine warm acupuncture therapy. After acupuncture at points such as Zhongji and Sanyinjiao, a type of incense stick is applied for warm moxibustion at the needle tip. Through the synergistic effect of the warm thermal stimulation and the toxic properties of the medicine, it can clear heat, eliminate dampness, detoxify and unblock the meridians, alleviating local symptoms and enhancing the overall anti-cancer effect [11]. Furthermore, for patients with advanced CC accompanied by vaginal bleeding and foul-smelling discharge, a TCM vaginal irrigation therapy can be adopted. Selected are Chinese herbal decoctions such as JinYinHua, LianQiao, and KuShen, which are used for local irrigation. This not only can eliminate toxins and dampness in the vagina, reduce infection, but also could inhibit the growth of local tumor cells and improve the quality of life of the patients.

The anti-cancer effects of such toxic TCM and various TCM treatment methods, such as acupuncture, moxibustion at the umbilicus, and external application of TCM are all centered on the theory of "using poison to counter poison". The former relies on the main active ingredients of the drugs to precisely act on tumor cells through specific pathways, while the latter achieves the elimination of toxic substances through methods, such as stimulating acupuncture points, mucosal absorption, and local application. It can exert effects such as regulating cell toxicity, improving immune function, and optimizing the TME, and they can achieve therapeutic effects such as inhibiting tumor proliferation, inducing cancer cell apoptosis, blocking metastasis and spread, and alleviating clinical symptoms when they use together. The objective of this study is to systematically evaluate the scientificity and

practicability of the "using poison to counter poison" approach in the treatment of gynecological cancers, clarify its therapeutic mechanism, target population, and multiple treatment pathways, and provide theoretical support for modern integrated traditional Chinese and WM cancer treatment, promoting the modern transformation and internationalization of TCM in cancer treatment. In summary, the combination of toxic Chinese herbs with acupuncture, abdominal moxibustion, and external treatment with TCM, shows unique advantages in the treatment of gynecological cancers, further confirming the application value and clinical potential of the "using poison to counter poison" approach in this field.

4. Differentiation between TCM and WM in the Treatment of Gynecological Cancers

TCM and WM have distinct characteristics and advantages in the treatment concepts and strategies for gynecological malignancies. WM mainly employs surgical resection, radiotherapy, chemotherapy, targeted therapy, and immunotherapy, aiming to directly eliminate or kill tumor cells. The treatment plans are relatively standardized, with shorter treatment cycles and rapid onset of effect. However, for advanced or recurrent patients, due to extensive tumor metastasis, formation of drug resistance, and decline in body functions, the treatment options are limited, and the overall efficacy is limited, resulting in poor prognosis and difficulty in significantly improving survival and quality of life [12]. Compared with TCM, the treatment of TCM is centered on the holistic view and syndrome differentiation and treatment. It focuses on coordinating the balance of yin and yang in the body, regulating the circulation of qi and blood, and maintaining the functional state of the internal organs. It emphasizes the equal emphasis on "strengthening the body's defenses and eliminating pathogenic factors", paying attention not only to directly inhibiting the progression of tumors but also to improving the internal environment of the body, alleviating clinical symptoms and enhancing the quality of life of patients. Clinical practice has shown that TCM has positive effects in reducing pain, improving appetite, alleviating fatigue, and regulating emotions. It can alleviate the adverse reactions caused by radiotherapy and chemotherapy to a certain extent, slow down the progression of the disease, and thereby improve the overall survival experience of patients. In recent years, TCM has gradually developed various characteristic treatment strategies, such as "using poison to counter poison" in the intervention of GC, and combined with WM treatment, in order to control cancer while improving the patient's body condition and further optimize the prognosis [13,14].

5. Conclusion

In conclusion, the application of “using toxins to counter toxins” in TCM for the treatment of GC has provided new treatment ideas for cancer treatment. Its unique anti-cancer mechanisms, such as inducing cell apoptosis and inhibiting angiogenesis, demonstrate the potential of TCM in cancer treatment. However, at present, this therapy still faces many challenges, such as significant toxic reactions, unclear mechanism of action, insufficient clinical experimental evidence, etc., which limit its wide application. Future research needs to combine WM technologies to deeply analyze the pharmacodynamics and pharmacokinetic characteristics of the active ingredients, optimize the formulation process to improve targeting, and verify its efficacy and safety through strictly designed clinical trials. At the same time, the integrated treatment model combining traditional Chinese and WM is expected to become an important development direction. By using WM means to quickly control the condition and complementing it with TCM to regulate the TME of the body and reduce recurrence and metastasis, it can not only prolong the survival period but also improve the quality of life of patients. Although there are still obstacles ahead, with the advancement of interdisciplinary cross-research, the “using poison to counter poison” treatment approach of TCM may occupy a more important position in the precise treatment of GC, bringing more hope to patients.

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