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Chinese Herbal Medicine and Its Application for Female Cancer

Rongyun Wang, Qiuhua Sun, Yifan Lin, Ling Wang, Yuan Liu, Chi Chiu Wang and Lu Li

Abstract

Chinese herbal medicines (CHMs) have been widely used to promote health and treat illnesses in daily medical care throughout Asia while mostly accepted as an alternative medical method in many nations of the western world. CHM has a unique therapeutic effect to reduce adverse effects on cancer patients caused by chemotherapy and surgery; however, we did not find any high-quality review for the claimed effects. In this review, we will summarize the history, basic theories and principles, and clinical applications of CHM for disorders, especially female cancers. Meta-analyses to evaluate the efficacy and safety of CHM in the treatment of ovarian cancer and breast cancer have been conducted. The results showed that combined CHMs and western medicines treatment (CHM-WM) had significantly relieved the symptoms and reduced the side effects after surgery and chemotherapy on both ovarian cancer and breast cancer. However, more high-quality and large-scale RCTs are necessary to confirm the efficacy and safety of CHM-WM intervention.

Keywords: Chinese herbal medicines, female cancer, efficacy and safety, ovarian cancer, breast cancer, clinical application

1. Traditional Chinese medicine and Chinese herbal medicines

1.1 Traditional Chinese medicine

Traditional Chinese medicine (TCM) has a history that spans 5000 years and has been widely used to promote health and treat illnesses [1]. Although TCM has such wide applications as an important part in daily medical care throughout Asia, it is mostly accepted as an alternative medical method in many nations of the western world.

There are nine approaches of TCM, including Chinese medicines (中藥), acupuncture (針灸), food therapy (食療), Qi Gong (氣功), tai chi exercise (太極), tui na (推拿), cupping (拔罐), die da (跌打), and gua sha (刮痧). Most of these therapeutic techniques in TCM have spread abroad since the sixth century BC, and in most western countries, Chinese medicines and acupuncture are the two most popular therapies of TCM nowadays.

With the advantages of Chinese medicines, including less side effects and greater effectiveness in some chronic diseases and cancers than Western medicines, it was gradually accepted by foreigners and now has been spread to over 160 countries [2].

More and more foreign researchers and clinical doctors seriously have interests in it and come to China for further study.

1.2 Chinese herbal medicine books

Most Chinese medicines are derived from nature, including plants, animals, and minerals. Herbal medicines from plants are much more commonly applied than the others. In China, it is not only considered as a primary therapy for treatment but also as a supplementary therapy to promote health in general [2].

Shen Nong's *Herbal Classic* (神農本草經) [3], which is considered the oldest book on oriental medicines, roughly classified 365 species of roots, grass, and woods from plants and furs, animals, and stones into three categories (finest grade, moderate grade, and lowest grade) according to toxicity, effectiveness, and pharmacological effect of them. "Ben Cao" has been developed widely and quickly in China and has been comprehensively studied for about 2000 years. Another world famous book is *Compendium of Materia Medica* (本草綱目), which is also called the *Encyclopedia of China* [4], which considered as the most important and comprehensive review to study herbs by classification, names, property, identification, function, application, formula, and so on. It opened the door to the world for the herbal medicines in Chinese medicine since it was translated into different languages in the seventeenth century [4].

In the late nineteenth century, with the influence of foreign scientific and technical influences, Western medicine spread to China, and it has been in coexistence with Chinese medicines since then [5]. Correspondingly, the community and medical societies defined a new concept of "Chinese herbal medicines (CHMs)" from "Ben Cao" and "Chinese medicines" as different from "Western medicines" [6] to identify the corresponding medicines. After the establishment of the People's Republic China, there comes the faster development of CHM [2].

Chinese Pharmacopeia (中國藥典) and *Chinese Herbal Medicine* (中華本草) were published and considered as the most useful and important reference books as Bibles of the Chinese medicine. In *Chinese Pharmacopeia* over 3700 Chinese medicines were listed, while in *Chinese Herbal Medicine* over 8900 different medicinal substances were recorded. Approximately 600 Chinese herbs are widely used, while about 250 or so are commonly used in clinical practice [7].

These two Bibles gave all the details and information on individual herbs, animals, and mineral products, including formal names, different names, common names, species, source, original plant, cultivation (aquaculture) point, harvest processing, medicine and marketing, medicine identification, chemical composition, pharmacology, processing, properties, effects, application indications, compatibility, usage, dosage, precautions, preparation, clinical research, medicine theory, annals, notes, and references. They also conclude on special topics about history, resources, storage, chemistry, and pharmacology in Chinese medicines [7].

2. Theories and principles of Chinese herbal medicines

2.1 Basic properties of CHM

Four gases (四氣), namely, hot (熱), warm (溫), cold (寒), and cool (涼), refer to four temperature characteristics of the herbs [2, 8]. There is another character called neutral (平), which means the existence of both hot and cold [2].

Five flavors (五味), namely, sour (酸), bitter (苦), sweet (甘), spicy (辛), and salty (咸), refer to five taste properties of the herbs [2].

Lifting-dropping and floating-sinking (升降浮沉) applies the elevation-elimination and outward-inward tendencies of the herbs in the body. For example, good controlling of the Qi and blood is the basic way in stroke treatment in Chinese medicine, and then a doctor may give a Chinese Thorowax root (Chai Hu) and immature bitter orange (Zhi Shi) as basic formula [2, 6, 9]. With the lifting function of Thorowax root, it can clear up the gas accumulated in the liver. Depends on the dropping effect of bitter orange, it can sort out the gas in the intestine and then make the gas flow smoothly within the body.

Take lotus as an example; its flower is used to prevent heat stroke, its nut is applied to treat hypertension, its root can improve gastrointestinal function, and its stem has anti-miscarriage effects [10].

2.2 Application principles of CHM

As in Western medicine, medicines are often applied separately or in combination as cocktail with the same or complementary function. It is important to understand that each medicine has its own effect and function, but in most cases, instead of being prescribed individually, formulae are commonly used by TCM practitioners as therapy to different kinds of health-related problems [11].

Chinese medicines are prescribed in formulae. Based on medical knowledge and personal experience, the TCM practitioners decide the formula according to the clinical presentation [12]. In practice of CHM, the first formula is based on identified health problems according to the basic diagnosis theories, that is, the TCM practitioners will choose one basic formula (consisting of 4–20 herbs) from all traditional formulae related to this disease. Then the doctors will add some other herbal medicines into or subtract other herbal medicines from the basic formula, mostly according to their own experiences. For example, if a patient is suffering from headache, the TCM practitioner will prescribe a formula called “Yin Qiao San (銀翹散)” as basic formula [11], for the patient who is catching a cold. The practitioner will further identify if the patient needs some more medicines; such as if the patient has a heavy headache, mulberry leaf (Sang Ye, *Folium Mori*) will be added into the basic formula [11]. Sometimes, the practitioners will also make changes to the dosages of some herbal medicines or the whole formula to meet the specific needs of individual patients. For example, if the patient is a child, the doctor may consider reducing the total dosage and duration of the formula.

3. Clinical application of Chinese herbal medicines

3.1 Efficacy and safety of CHM for ovarian cancer

Ovarian cancer (OvC) is a malignant tumor which invades the ovarian epithelium and interstitium. Reduction surgery combined with adjuvant chemotherapy is the standard treatment for OvC patients, but the adverse effects due to chemotherapy still remain a major problem. While CHM therapy has a unique therapeutic effect to reduce side effects of chemotherapy by boosting the immune system, the evidence of CHM in the treatment of OvC patients is limited [13].

A systematic review to evaluate the efficacy and safety of CHM in the treatment of OvC after reduction surgery and adjuvant chemotherapy has been conducted.

Chinese National Knowledge Infrastructure (CNKI) and PubMed up to December 31, 2018, were searched to identify relevant studies. Only randomized controlled trials (RCTs) were included, and there was no limitation on language of the publication. Data were extracted from all included studies, and meta-analysis

was performed with ReviewManager 5.3. The study quality was assessed, and pooled risk ratios (RR) or mean difference (MD) with 95% CIs were used to evaluate the efficacy and safety of CHM.

A total of 18 RCTs involving 975 participants were included. There was no placebo, no treatment, and CHM alone. Compared with Western medicine (WM) alone, Chinese herbal medicine combined with WM (CHM-WM) significantly improved TCM syndromes and symptoms, KPS scores, CD4 counts, CA125 levels, and 3-year survival rate ($P < 0.05$). Incidences of gastrointestinal reactions, marrow depression, and urinary system symptoms were significantly lower in CHM-WM group than in WM group ($P < 0.01$). There was no significant difference in CD3 counts, CD8 counts, quality of life, liver function, and peripheral neuropathy between the two groups ($P > 0.05$).

The systematic review indicated that CHM combined with WM is effective and safe as a treatment for OvC patients after reduction surgery and adjuvant chemotherapy. However, more high-quality and large-scale RCTs are needed to confirm the efficacy and safety of CHM intervention.

3.2 Efficacy and safety of CHM for breast cancer

Breast cancer is a disease in which malignant (cancer) cells form in the tissues of the breast. Surgery combined with adjuvant chemotherapy is considered as the standard treatment for breast cancer patients, but the adverse effects after surgery and chemotherapy still cause big problems. While CHM therapy has a unique therapeutic effect to reduce side effects of chemotherapy and surgery by boosting immune system, we did not find any high-quality review for the claimed effects of CHM-WM treatment on breast cancer patients. A systematic review to evaluate the efficacy and safety of CHM-WM treatment in patients with breast cancer has been conducted.

Chinese National Knowledge Infrastructure (CNKI) and PubMed databases (up to August 31, 2019) were searched to identify relevant clinical studies. Only randomized controlled trials (RCTs) were included, and there was no limitation on language of the publication. Data were extracted from all included studies, and meta-analyses were performed with Review Manager 5.3. The study quality was assessed, and pooled risk ratios (RR) or mean difference (MD) with 95% CIs were used to evaluate the efficacy and safety of treatments.

A total of 22 RCTs involving 1256 participants was included. Compared with WM alone, CHM-WM significantly improved skin flap necrosis and upper limb lymphedema after breast cancer surgery ($P < 0.05$). Incidences of nausea and vomiting, constipation, marrow depression, and hot flashes were significantly lower in CHM-WM group than in WM group ($P < 0.05$). There was no significant difference in tumor metastasis and recurrence, survival rate, platelet counts, and CD3 and CD4 levels between the two groups ($P > 0.05$).

Meta-analysis results showed that the combination of CHMs and WMs was an effective and safe therapy for patients with breast cancer after surgery and chemotherapy. However, more high-quality and large-scale RCTs are necessary to confirm the efficacy and safety of CHM-WM intervention.

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