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Effect of Traditional Medicine on Clinical Cancer

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ABSTRACT

Researchers and clinical doctors are making an effort to further improve cancer treatment. The fact that many traditional medicines have action on multiple signaling pathways and cancer targets results in fewer adverse effects compared to some modern treatment methods. This mini-review summarized and commented on the effect of traditional medicine on clinical cancer treatment. Most of the patients tried to used traditional medicine to relieve their uncomfortable during cancer progress and caner therapy. Although the effect of traditional medicines is gentle, long-term use of them might be instrumental to cancer patients. In addition, Traditional medicine has been regarded as an effective psychological intervention approach for cancer patients. The effect of traditional medicine on cancer, include the direct therapeutic effects, the reduction of side effects, psycho-behavioral intervention improves, and other potential clinical effects that have been found in preclinical studies.

Introduction

As a significant public health problem in the world, cancers also account for the second most deaths in the US [1]. In 2020, approximately 1.8 million new cancer cases and 0.6 million cancer deaths occurred in the US [1]. The cancer survival rate increases stably from 2017, which results in 3 million fewer cancer deaths. Overall cancer survival of several types of cancers has been improved over years, these cancer types include lung cancer, colon cancer, breast cancer, and prostate cancer [1]. Yet, recently, the decrease in the cancer death rate started to reach its bottleneck phase. Researchers and clinical doctors are making efforts to further increase cancer survival. Better treatment and early diagnosis are regarded as the most critical field in clinical cancers. The development of cancers involves many relative cancer biological processes, such as cancer cell proliferation, apoptosis, invasion, and metastasis. The systematic factors of cancer include the cancer microenvironment and the immune system. Thus, the treatment of cancers requires consideration of multiple aspects and it is a comprehensive therapy. Traditional medicine has been applied in clinical treatment for thousands of years in some countries. It is especially popular in East Asian countries such as China, Japan, and Korea. Recently, traditional medicines have been studied intensively for their potential clinical use [2-6]. The term "cancer" is firstly developed by Hippocrates (460-370 BC), a Greek physician who is considered as the "Father of Medicine". He invented the terms "carcinos" and "carcinoma", which later became "cancer". In ancient China, there was no concept of cancer, but traditional Chinese medicine was indeed used for anti-cancer therapy in some undefined cancer cases. The fact that many traditional medicines have action on multiple signaling pathways and cancer targets results in fewer adverse effects compared to some modern treatment methods.This article reviewed the effect of traditional medicine on cancer. These effects include the direct therapeutic effects, the reduction of side effects, psycho-behavioral intervention improves, and other potential clinical effects that have been found in preclinical studies.

Clinical Used of Traditional Medicine in Cancer

In clinical cancer treatment, traditional medicine can be applied as complementary medicine. In Taiwan, a cancer treatment population study [7] has been done to investigate the influence of traditional medicine in clinical cancer treatment. Adults patients with cancer who seek complementary and alternative medicine treatments were included in this study. These patients included more than 74,000 patients who used traditional medicine and over 500,000 patients who used modern medicine only. The results revealed that younger patients, female patients, patients who were white-collar workers, and patients who lived in highly

urbanized areas were more likely to try traditional medicine. A patient usually starts traditional medical consultation one year and three months after the first cancer diagnosis. Among patients using traditional medicine, 19.4% of patients have breast cancer, while among patients who used modern medicine only, 13.6% of patients have intrahepatic bile duct cancer. These two types of cancer were the most among traditional medicine users and non-traditional medicine users. The study also indicated that endocrine, nutritional and metabolic diseases, and immunity disorders are the most common reasons for the patients seeking a medical doctor. About 33% of patients who used traditional medicine saw traditional medical doctors over 9 times each year. In terms of the treatment used, the most popular treatment used was traditional herbal medicine. The most common undeserved conditions for traditional treatment were insomnia, malaise and fatigue, dizziness and headache, gastrointestinal disorders, myalgia and fasciitis, anxiety, and depression. This study showed that traditional medicine is commonly used in clinical cancer treatment in some areas. Most of the patients tried to used traditional medicine to eliminate their symptoms during cancer progress and caner therapy. Based on the population found, clinical patient-specific traditional medical treatment should be studied in the future.

Direct Therapeutic Effects

The application of traditional medicine during cancer treatment is common in Chinese hospitals. Evidence has shown the association between traditional medical therapy and survival outcomes in patients with cancers. A multi-center prospective clinical study [7] among patients who had undergone radical resection for stage II and III colorectal cancer showed that longer duration of traditional use is beneficial for the improvement of cancer survival rates. This study revealed that although the effect of traditional medicines is gentle, long-term use of them might be instrumental to cancer patients. Much as the study of cancer is popular in the research, many mechanisms underlying cancers remain largely unknown, this also impedes the understanding of the direct effects of traditional medicine. More studies should be done to explore the direct pharmacological targets of traditional medicine.

Reduction of Side Effects

In clinical cancer treatment, the most commonly used therapeutic approaches are radiotherapy, chemotherapy, and surgical resection. Unfortunately, these cancer treatment approaches often bring about considerable side effects. Traditional medicine has been used as a desirable method to alleviate the side effects of chemotherapy or radiotherapy. One of the syndromes of late-phase cancer patients is anorexia. Patients with cancer cachexia usually have anorexia, less food intake, and loss of skeletal muscle [8]. These symptoms are barely recovered by modern cancer therapy. To date, studies have found several potential mechanisms underlying cancer cachexia. The overwhelming systemic inflammation activities have been regarded as a critical reason for cancer cachexia symptoms. These inflammation activities include the increase of IL-1, IL-6, TNF-alpha, tumor-induced factors in the plasma [9]. Complementary and alternative traditional medicine is thought to be a promising treatment for the improvement of cancer cachexia status. More study is required for the development of traditional medicine for the reduction of modern cancer therapy.

Psycho-Behavioral Intervention Improves

During cancer treatment, most patients suffer from depression, anxiety, pain, and fatigue brought by both cancer and the therapy. These symptoms decrease the patients' quality of life. It has been reported that psychological interventions can be part of comprehensive treatment for relieving symptoms and improving quality of life [10]. Recent studies indicated that psychological interventions can be applied to improve mental health in cancer patients [11] and reduce the unfavorable impacts of cancer treatments. Relaxation, hypnosis, and distraction are common psychological interventions used in clinical treatment [12-14]. Traditional medicine has been regarded as an effective psychological intervention approach for cancer patients as it can help the relaxation, hypnosis, and distraction of the patients.A study investigated the psychological impacts of traditional medicine showed that traditional medical treatment can effectively improve the quality of life in cancer patients. The investigated traditional therapies included acupuncture, massage, traditional Chinese medicine five elements musical intervention, traditional medicine dietary supplement, Qigong, and Tai Chi. Results revealed that patients with traditional treatment had better psychological outcomes in terms of reducing fatigue and gastrointestinal distress. For example, in cancer patients, acupuncture significantly decreased fatigue, diarrhea, and duration of post-surgical flatulence. These findings demonstrate that traditional medicine can improve the quality of life in cancer patients in a psychological way.

Prevention of Cancer

Traditional medicine includes physical and psychological treatment. In modern cancer therapy. Many traditional methods are now used for cancer prevention. Many traditional herbs have shown to have potential as chemoprevention agents[15]. Chemoprevention is a favorable strategy for cancer treatment. It is reported that many traditional derived compounds can be used to prevent cancer development [16]. Therefore, more exploration of cancer prevention in traditional medicine is required in the future.

Summary

This article reviewed the effect of traditional medicine on cancer. The fact that many traditional medicines have action on multiple signaling pathways and cancer targets results in fewer adverse effects compared to some modern treatment methods. Most of the patients tried to used traditional medicine to relieve

their uncomfortable during cancer progress and caner therapy. Although the effect of traditional medicines is gentle, long-term use of them might be instrumental to cancer patients. In addition, traditional medicine has been regarded as an effective psychological intervention approach for cancer patients. More study is required for the validation of the effectiveness of traditional medicine and the optimization of traditional medical treatment in cancer treatment.

Conflict of Interest

There is no conflict of interest.

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Invited Author

Hengrui Liu studied Chinese pharmacology, Chinese materia medical, and biochemistry at Guangzhou University of Chinese Medicine (Guangzhou, China), Jinan University (Guangzhou, China), and the University of Cambridge (UK) respectively. He worked in the Department of Anesthesiology, Stony Brook Medicine (NY, US) as a Research Scholar and is currently studying in the Department of Biochemistry, University of Cambridge, UK. He received the Excellent Exam-free Graduate School Recommendation and Undergraduate Scholarship from the Guangzhou University of Chinese Medicine, First-class Graduate Scholarship from the Jinan University, and Academic Progress Award from the Anesthesia and Cancer Laboratory (Stony Brook Medicine). He is an editorial board member of the Chronicles of Complementary, Alternative Integrative Medicine (GRF Publishers), Cell Biology (Science Publishing Group), Cancer Research Journal (Science Publishing Group), and Journal of Medicine and Biology (TRIDHA Society of Biology & Medicine). He serves as a peer reviewer for the International Journal of Molecular Sciences (MDPI, IF 4.6), Molecular Medicine Reports (SpandidosPublicatio, IF 1.9), Oncology Letters (SpandidosPublicatio, IF 1.9), Experimental and Therapeutic Medicine (SpandidosPublicatio, IF 1.5), Journal of Signa Vitae (MRE PRESS, IF 0.3), Molecular and Clinical Oncology (SpandidosPublicatio),Archives of Surgery and Clinical Case Reports (Gavin publisher) and Archives of Cancer (Gavin publisher). He has published papers in Pharmacology and Therapeutics (IF 11.1), Cancers (IF 6.2), Journal of Ethnopharmacology (IF 3.4), Biomedicine & Pharmacotherapy (IF 3.7), etc. During his early career, he studied the potential mechanism underlying the effect of Chinese traditional medicine on osteoporosis. Later on, in Stony Brook, his work has contributed to the understanding of the role of ion channel and anesthetics in cancer progression. His current study is focusing on the function and structure of voltage-gated sodium channels and the development of subtype-specific ion channel antibodies for pharmacological application.

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