

Current Clinical Application of Acupuncture in the Management of Cancer-Related Complications

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Abstract. Cancer and its associated complications bring about an unimaginable degree of suffering for patients along with a heavy financial toll, leaving patients' quality of life profoundly undermined. A large number of pharmaceutical agents have been developed and used in clinical settings to treat these complications. However, the available drugs mostly have large side effects, such as stomach issues or constant damage to organs. These side effects will lead to lower patient compliance with ongoing treatment, which in turn will contribute to increased disease progression. So we have a clear clinical need for safer, more effective add-on types of therapy when it comes to cancer stuff. Acupuncture, characterized by being well-tolerated and having few side effects, shows some special clinical benefits. It meets clinical demands quite well and is one of the more frequently utilized modalities for dealing with cancer complications. This paper reviews recent domestic and overseas papers about acupuncture for commonly occurring cancer-related complications such as cancer pain, cancer-related fatigue, cancer-related sleep disorder, gastrointestinal dysfunction, and chemotherapy-induced peripheral neuropathy. Aims to give clinical practitioners something useful as a reference and helps make acupuncture part of overall treatment plans for cancer conditions involving different body areas in a combined Chinese-Western approach. Furthermore, it can also support further efforts to improve the efficacy of treatment and to investigate how acupuncture works to relieve the cancer complication.

Keywords: Acupuncture, Cancer, Tumor, Clinical application

1. Introduction

Cancer is characterized by uncontrolled growth and autonomous dissemination of cells with high invasiveness and histological atypia. An abnormal growth can occur in any area of the body, and it may be either a benign or malignant tumor [1]. Among them, the bad kind of tumor, which is also called cancer, makes people very sick by hurting how their body works and even making them feel sad inside, plus it's also become a big problem that might hurt someone's life and health. The World Health Organization (WHO) says that cancer is the cause of about one-sixth of all deaths around the globe [2].

Tumor patients often have pain, tiredness, and poor sleep. Furthermore, they are usually burdened with both psychological distress - fear, anxiety, and financial strain [3]. Though conventional therapies like surgery, radiation therapy, chemotherapy, and immunotherapy are a cornerstone of

cancer management, they can also bring on harmful side effects that seriously impact the patient's quality of life. Nausea, vomiting, etc., are quite common too, and such symptoms might even drive patients more reluctant towards the medical proceedings and demoralize their spirits [4]. While Western medicine has little effect on such side effects, it is often not fully effective in alleviating the patients' sufferings. On the contrary, the application of acupuncture is getting more and more popular and about 3.5 million Americans take acupuncture every year. Therefore, we should attach greater importance to using Chinese and Western medicines in combination. By leveraging the benefits of both, we can enhance therapeutic outcomes, establish a comprehensive, systematic, and individualized model for tumor treatment, and ultimately improve patient prognosis [5].

The historical understanding of tumors in Traditional Chinese Medicine can be traced back to the Shang Dynasty and was documented under disease names such as Liu or Jiju. As a treatment method outside of TCM, Acupuncture regulates overall function through the stimulation of certain acupoints in order to achieve the therapeutic effects of regulating Qi and blood, strengthening healthy Qi, and eliminating evil Qi. Its efficacy in the clinical management of tumors is getting more and more recognized and backed up by proof [6].

There are many studies in recent years to evaluate the clinical application value of acupuncture in cancer. So, pay extra attention to how well TCM treatments work and whether they're effective. Review the treatment of acupuncture on malignant tumors and their complications in the past few publications. According to the available data, effective treatments will be selected and chosen. To offer both theoretical and practical references for the clinical application of acupuncture in dealing with malignant tumors and relevant complications.

2. Alleviation of cancer-related pain with acupuncture

Pain, as the most common symptom in cancer patients, usually occurs due to direct tumor invasion, metastasis, or treatments. It may get really bad and make your life much worse. Acupuncture has found broad application in treating cancer-related pain, mostly due to its outstanding efficacy in this domain. Pain syndromes are one area where acupuncture excels in terms of therapeutic efficacy. Acupuncture is often combined with the Three-Step Analgesic Ladder to obtain beneficial results. This can improve the effectiveness of analgesics at the same time as decreasing the dosage of analgesic medicines. It can therefore help reduce risks for dependence on medicine as well as the incidence of adverse effects, thus contributing to improved quality of life for patients [7].

In a study by Zhang et al., warm needling using reinforcing techniques produced a certain total effective rate (91.18%) in curing pains caused by cancers through reductions in the pains' intensities, the numbers of acute occurrences and consumption of relief approach tools besides enhancing sleeping duration [8]. In a clinical experience of Zhang et al. (n = 50), after one-week courses involving fire needling at Ashi locations conducted once a day to remove pains related to cancers, a 92% completeness rate emerged, showing benefits for quick effects and shorter procedures.^[9] In a research led by Wang et al., an intervention plan combining electro-acupuncture according to pattern separation and oxycodone ER tablets took place during an ongoing duration (continuous 14-day) of treatment, showing 93.33% efficacy of the pain-relieving effect [10].

3. Acupuncture for the treatment of cancer-related fatigue

Cancer-related fatigue(CRF) is a serious medical problem for most cancer patients; it originates from the prolonged and long-term psychosomatic impacts of the illness and treatment. Defined by

continuous and unremitting fatigue covering both emotions and cognition. It significantly affects the quality of life for more than half of the patients [11].

In recent years, the prospect that acupuncture might help reduce Cancer-Related Fatigue (CRF) has attracted a lot of research interest all over the world. Molassiotis et al. did a study on the efficacy of acupuncture in breast cancer patients, which proved that acupuncture had a definite therapeutic effect on CRF and proved to be an effective treatment. In the randomized controlled trial, patients were assigned to the two groups by computer. From the results, we can see the patients in the acupuncture group have a better improvement in fatigue, anxiety, depression and global QOL [12]

CHENG et al. In their randomized, double-blind experiment, acupuncture at the exact points (LI4, CV4, ST36, KI3, SP6) of the Chinese Brief Fatigue Inventory (BFI-C) was studied in CRF Active. The people receiving treatment had noticeably fewer BFI scores after two weeks, and they kept getting better by six weeks following a follow up [13].

Auricular acupressure, also known as ear seed therapy, is placing the *semin vaccariae* (cow herb seeds) or magnetic seeds at specific points of the ear with adhesive tape. Stimulation is achieved through pressure. From the studies we can find that such a type of method can increase the scores of the Hamilton Anxiety Scale, the Pittsburgh Sleep Quality Index, which proves the effectiveness of this method to decrease anxiety and improve sleep quality [14]. Based on this evidence, Wang Xiaoqing conducted a study involving 70 patients who had been through chemotherapy and had gastrointestinal tumors. The intervention was giving auricular acupressure at the liver, spleen, stomach, Shenmin, and Sympathetic nerves. As far as the results are concerned, we observe a significant drop in cancer-related fatigue amongst the patients in the treatment group. The quality of life scale was significantly better in the treatment group than in the control group. The study found that using auricular acupressure in conjunction with aerobic exercise improves the clinical effect and also improves the quality of life for the patient [15].

4. Acupuncture for the management of Cancer-Related Insomnia

Cancer-Related Insomnia (CRI) affects approximately 60.7% of patients and encompasses sleep disorders, such as sleep initiation difficulty, frequent awakenings, early awakening, and reduced sleep quality, occurring during cancer progression or treatment. While medications like eszazolam are commonly used, concerns over their addictive potential drive a preference in China for adjunctive therapies, including acupuncture [16].

In a study by Ye Min et al., a prescription database for acupuncture in cancer-related insomnia was established through a search of the CNKI, Wanfang, VIP, and PubMed databases. The analysis identified Shenmen (HT7), Baihui (GV20), Sanyinjiao (SP6), and Yintang (GV29) as the most commonly selected primary acupoints, with Zusanli (ST36), Shenting (GV24), Neiguan (PC6), Taichong (LR3), Guanyuan (CV4), Sishencong (EX-HN1), Hegu (LI4), and Taixi (KI3) also being highly prevalent [17]. In a study utilizing a “Conception and Governor Vessel regulation” needling approach with pattern-based supplementation and drainage techniques, Zhao Weizhe observed a total effective rate of 93.75% for cancer-related insomnia. Post-treatment assessments revealed significant reductions in both ISI and PSQI total scores compared to baseline, with outcomes far exceeding those in the control group [18]. Zhang Jialing et al. employed an active acupuncture protocol comprising body electroacupuncture and auricular acupoint massage for breast cancer patients suffering from chemotherapy-induced insomnia. The treatment involved the selection of six fixed acupoints, with four additional acupoints chosen based on concurrent symptoms. The data showed that insomnia severity, as measured by the Insomnia Severity Index (ISI), significantly decreased from baseline levels after the intervention [19].

5. Acupuncture for the management of cancer-related gastrointestinal dysfunction

As a common complication among cancer patients, cancer related gastrointestinal dysfunction mainly manifests as nausea and vomiting, affecting over 80% of patients. Its cause may be due to anticancer therapy like radiation therapy, chemotherapeutic agents etc. or it can be caused by the tumor itself. More than just reduce eating and quality of life, if it continues to symptoms are prone to lead to very serious sequela, for example metabolic disorder, malnutrition, electrolyte disorder and weakened immunity. This cascade ultimately weakens the patient's constitution, reduces the effectiveness of treatment, and may even result in a worse prognosis [20].

Therefore, we should place more clinical emphasis on it. A lot of studies show acupuncture combined with drug treatment can greatly improve anti-vomiting effect, improve patients' symptoms, make them eat normally again, and restore metabolism faster. This combination can also reduce the risk of dehydration and malnutrition associated with vomiting, and improve overall tolerance to treatment. In 2018, the American Society of Clinical Oncology (ASCO) recommended the use of acupuncture and acupressure to manage nausea and vomiting. Also, it noted that electroacupuncture could be an adjunct to antiemetic medications during chemotherapy [21]. Similarly, the National Institutes of Health (nHi) recommends acupuncture as adjunctive treatment in the management of chemotherapy-induced nausea and vomiting (cinv). This endorsement has further recognized acupuncture's role in CINV management [22].

In a clinical study conducted by Lu Jinsheng et al., acupuncture at the Stomach three needles, combined with Granisetron, was evaluated. The experimental group experienced a significant decrease in metoclopramide use during chemotherapy compared to the controls, indicating that the regimen reduced the frequency, severity, and duration of CINV [23]. Pu Zhongjian et al. (N = 163) conducted a randomized trial comparing warm needling combined with electroacupuncture on both sides of ST36 and PC6 with electroacupuncture alone, ginger-isolated moxibustion, and a control. The combination therapy group had better results, with a lower control rate and severity score for both acute and delayed vomiting [24].

Reviewing the acupoint selection patterns from all the articles reveals that Zusanli (ST36), Neiguan (PC6), Hegu (LI4), and Zhongwan (CV12) were most used in any acupressure, electroacupuncture, or conventional acupuncture, followed by abdomen points such as QIHAI (CV6), GUANYUAN (CV4), and TIANSHU (ST25). For acupoint injection, the most frequently chosen point is Zusanli (ST36).

6. Acupuncture for Chemotherapy-Induced Peripheral Neuropathy (CIPN)

Chemotherapy-induced peripheral neuropathy (CIPN), caused by neurotoxic agents like oxaliplatin and paclitaxel, leads to specific symptoms such as numbness and tingling, as well as cramps and pain, which differ according to drugs and body parts. Notably, the generally slower recovery of foot neuropathy compared to hand neuropathy results in increasingly worse lower limb impairment over time. CIPN's long course causes severe long-term limb function damage [25].

Given its recognized benefits in pain management and neurological modulation, acupuncture is widely studied for CIPN. A meta-analysis by Li Yan et al. of 34 trials identified optimal modalities for different outcomes: electroacupuncture plus moxibustion for overall efficacy, auricular acupressure for pain relief, electroacupuncture with three-edged needles for nerve conduction, and warm needling for quality of life. A tiered treatment strategy was proposed accordingly [26].

In a study by Tian Yanping et al. on gastrointestinal cancer patients with post-chemotherapy neuropathy (N = 76), warm needling at multiple bilateral acupoints was compared to Neurotrophin

injection. Outcomes based on neurotoxicity grading and quality of life indicated that warm needling was significantly effective in reducing oxaliplatin-induced peripheral neurotoxicity [27].

7. Conclusion

As for clinical treatment and the initial investigation of using acupuncture interventions for cancer-related complications continues to illustrate the fact that acupuncture can significantly enhance and improve the patient's quality of life, especially for several types of cancer symptoms. For example, In terms of managing cancer-related fatigue(CRF), acupuncture does this by switching on the inherent metabolic systems which are already present inside the patient's body, in order to reduce the continuous, ever-lasting tiredness, as well as lack of energy. It enables us to perform our daily tasks more effectively. Acupuncture influences changes in neurotransmitter release and suppresses the inflammation factors while treating the cancer pain from bottom to top. Resulted in a requirement for the use of fewer analgesics and decreased adverse effects with long-term drug usage. Furthermore, there is a large amount of clinical experience for the improvement of complications such as chemotherapy-induced nausea and vomiting (CINV), peripheral Neurotoxicity, and Insomnia. It provides people with a safe, low-toxicity supplement treatment, ultimately enabling them to tolerate antitumor treatments more effectively and enhancing the overall treatment effects.

But the application of acupuncture in this field is still limited, and some restrictions hinder its wider use and practice in clinics. First, RCTs with small sample sizes and single-center designs generally have a weaker level of evidence. On the second side, there is no clear evidence that acupuncture can relieve the symptoms of cancer. Although some studies have examined it from a neuro-endocrine-immune perspective or the control of cell signaling pathways, the exact mechanism by which it works is still not fully understood. And also, it is hard for acupuncture to link itself with modern medical theories closely at a deeper level. Third, there is no standard process for selecting and manipulating points. Practice is based upon what each practitioner has done in the past, so it is hard to replicate. Finally, the combination of acupuncture with traditional Western medicine, like surgery, radiotherapy, chemotherapy, and molecular target therapy. This is not enough. This is a lack; it can't help us form real "comprehensive Chinese-Western therapy plans" because these two perspectives are seen as combined positive aspects.

However, despite the aforementioned issues, Acupuncture still has extensive development prospects and practical significance in the field of oncology. Acupuncture is safe, has few side effects, and patients generally accept it as a non-drug intervention from a broader value standpoint. It is suitable for long-term symptom management and improving the quality of life in patients with cancer. It can also address the issues that arise from using Western medical methods, and this is achieved through an all-encompassing, integrated approach. At the same time, acupuncture's personalized treatment ideas are consistent with the development trend of precision oncology. Tailoring methods based on the patient's constitution, the type of their tumor, and whether the patient has undergone treatment, leads to an individualized care process. And with more studying and practice, maybe acupuncture can become a primary cancer treatment, giving patients a better feeling and better results.

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