



Review article

Effects of auricular acupressure therapy for preventing constipation in leukemia patients undergoing chemotherapy: Protocol for a systematic review



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ABSTRACT

Introduction: Auricular acupressure therapy is widely used in East Asia and Europe to prevent constipation in leukemia patients undergoing chemotherapy. The aim of this systematic review will be to evaluate the available evidence from randomized controlled trials (RCTs) of auricular acupressure therapy for preventing constipation in leukemia patients undergoing chemotherapy.

Methods: The following databases will be searched from their inception until May 2017: MEDLINE, CINAHL, EMBASE, AMED, the Cochrane Central Register of Controlled Trials and four Chinese databases [Chinese BioMedical Database (CBM), China National Knowledge Infrastructure (CNKI), Wan-Fang Data and Chinese WeiPu Database]. Only the RCTs related to the effects of auricular acupressure therapy on preventing constipation in leukemia patients undergoing chemotherapy will be included in this systematic review. A quantitative synthesis of RCTs will be conducted using RevMan 5.3 software. Study selection, data extraction, and validation will be performed independently by two reviewers. Cochrane criteria for risk-of-bias will be used to assess the methodological quality of the trials.

Ethics and dissemination: This systematic review will not use data from individual patients and no privacy issues will be violated. The results will be disseminated through peer-reviewed publications.

Trial registration number: PROSPERO registration number: CRD42017067880.

1. Background

Constipation is a frequent health-related issue and a common side effect in leukemia patients treated with chemotherapy. According to a recent study, leukemia patients receiving chemotherapy may suffer with a high incidence of constipation (50%–80%), and the risk is increasing [1]. In leukemia patients treated with chemotherapy, constipation can cause loss of appetite, abdominal distension accompanied by the abrupt abdominal pain, hemorrhoids, and rectal tearing [2]. Moreover, untreated constipation may progress to fecal impaction, intestinal obstruction and even sepsis [3]. Furthermore, chemotherapy-induced constipation may impair patients' normal quality of life and result in the severe psychological symptoms such as anxiety and stress [4]. Hence, the prevention of constipation among leukemia patients undergoing chemotherapy is necessary in the clinical practice.

1.1. Description of the condition

To date, the recent research recommended that the administration of both oral and/or rectal laxatives may have beneficial effects to manage the chronic constipation [4]. However, leukemia patients receiving chemotherapy usually require additional interventions to alleviate the symptoms of constipation [5]. Moreover, these drugs are frequently associated with some undesired side effects, and increase the risk of serious adverse events (AEs) involving the electrolyte and mineral imbalances, severe dehydration and laxative dependence [6]. Therefore, patients receiving chemotherapy in East Asian often tend to seek complementary and alternative medicine (CAM) therapies for help in managing their constipation [7].

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1.2. Description of the intervention

Auricular acupressure (AA) is a major integral part of CAM. It is described as a technique that involves *Semen vaccariae* (wang bu liu xing) seeds, *Semen raphani* (lai fu) seeds, *Semen sinapis Albae* (bai jie) seeds or magnetic pellets with an adhesive tape on certain acupuncture points of ears [8]. In 1990, AA was regarded as a form of micro-acupuncture that may have an effect on the holistic human system [9]. Thus, the therapeutic effects can be achieved by stimulating specific acupuncture points of the ear that are connected to certain organs or systems of the body. To date, the research on AA has two main theories. Based on meridian theory in China, the ear is associated with 12 meridians, and continuously stimulating the ear can improve vital energy (Qi) and remove the blood stasis [10]. Based on reflexology theory in Europe, AA has been applied systematically since Nogier discovered the auricular microsystem in 1957 [11]. Currently, AA, as a non-invasive traditional procedure, has been widely accepted by CAM practitioners and patients in East Asian [12]. According to a 2011 cross-sectional study, AA was considered as the most widely used CAM therapy in South Korean [13]. What is more, a vast majority of the Traditional Korean Medicine doctors have applied this technique for treating different kinds of diseases in TCM clinics, especially for end-stage oncological diseases [13]. In addition, a population-based survey conducted in Mainland China also revealed that almost one-fourth of the oncological patients employed AA for managing their chemotherapy-induced side effects [14]. Recently, according to the international guideline from the Oncology Nursing Society, AA has been recommended as a suitable and promising technique for the management of chemotherapy-induced side effects [15,16].

1.3. How the intervention might work

The mechanism of action of AA is still not clear, and various theories have been proposed. In modern research, the primary speculation about AA is somatotopic arrangement theory. In 1980, doctor Oleson recruited 40 patients with specific musculoskeletal pain condition in a double-blind research to examine whether somatotopic arrangement theory corresponded to parts of the body and they obtained a 75.2% accuracy rating [17]. In addition, there are various neurophysiological connections between auricular reflex points and the autonomic and central nervous system. Thus, groups of pluripotent cells contain information from the whole autonomic and central nervous system attempt to create regional organization centers representing different parts of the body [18]. In 1998, a U.S. scholar, Choy, discovered that application of ear clips to the tragus may induce obvious changes in gastrointestinal peristalsis. He reported that the frequency of peristalsis was changed by clips on the ear and returned to normal with the clips off [19]. Therefore, the ears are the closest organs to the brain, and the application of AA in the auricular reflex points associated with gastrointestinal function may have a beneficial effect on alleviating constipation symptoms [20]. From the TCM perspective, the constipation falls under the heading of *BianJie*, which is attributed to ‘dysfunction of spleen in transportation’ and ‘stomach disharmony’. According to the theory of TCM, AA stimulates acupuncture points on ears, which could reinforce qi circulation and affect nourishment of the spleen, leading to an improved *Bian Jie* state [21]. Overall, the above basic modern scientific and TCM researches may partly account for the possible mechanism of AA, and provide a better understanding of the mechanism of AA.

1.4. Why it is important to do this review

Recently, a bibliometrics analysis of papers published from 1994 to 2012 in China showed that AA has been widely used in preventing various chemotherapy-induced side effects, including constipation [22]. Nowadays, numerous systematic reviews have investigated the

effects of AA on insomnia [23], postoperative pain [24], and vitro fertilization [25]. Nevertheless, there has been no systematic review specifically focusing on the efficacy of AA for preventing constipation in leukemia patients undergoing chemotherapy.

Therefore, the aim of this study is to update and critically evaluate the evidence from randomized controlled trials (RCTs) that have tested the efficacy and safety of AA in preventing constipation in leukemia patients undergoing chemotherapy.

2. Methods

2.1. Study registration

We will follow the reporting guidelines in Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement checklist. [26]. In addition, the protocol of this systematic review has been registered in PROSPERO (Registration Number: CRD42017067880).

2.2. Ethics and dissemination

A formal ethical approval is not required because this research will not use data from individual patients and no privacy issues will be involved. The results will be disseminated through peer-reviewed publications.

2.3. Criteria for considering studies for this review

2.3.1. Types of studies

Only the RCTs related to the effects of AA for preventing constipation in leukemia patients receiving chemotherapy will be included in this systematic review. Trials published in the form of dissertations will also be selected as eligible studies. No language restrictions will be imposed.

2.3.2. Types of participants

Patients with leukemia and more than 18 years of age undergoing chemotherapy will be included in this research.

2.3.3. Types of interventions

2.3.3.1. Control interventions. A sham AA/placebo or routine care as controls will be included. The routine care will involve appropriate physical exercises, dietary modification (water intake > 3000 mL/d and fiber consumption) as well as psychological interventions [27]. If leukemia patients undergoing chemotherapy present constipation (diagnosis according to the definitive Rome III criteria), laxatives treatments will be administered [28]. Studies is be excluded if the control group treatments is not relevant to routine care or other CAM therapies (e.g. acupuncture, moxibustion, Chinese herbals, Chinese patent medicine) and used as an adjunct treatment in conjunction with the routine care.

2.3.3.2. Experimental interventions. Studies will be included if AA is used as an adjunct therapy in conjunction with routine care for preventing constipation among leukemia patients undergoing chemotherapy. Considering that non-invasive AA is more common in the clinical practice. Thus, we only include the non-invasive AA intervention in this research. In addition, we will exclude studies in which other CAM therapies (e.g. acupuncture, moxibustion, massage, Chinese herbals, Chinese patent medicine) will be utilized as an adjunct treatment in conjunction with the routine care.

2.3.4. Types of outcome measures

2.3.4.1. Primary outcomes.

(1) Patient Assessment of Constipation–Symptom (PAC-SYM): is an

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