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Journal of Acupuncture and Meridian Studies

journal homepage: www.jams-kpi.com

REVIEW ARTICLE



Acupuncture Therapy for the Treatment of Myelosuppression after Chemotherapy: A Literature Review over the Past 10 Years

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Available online 19 October 2014

Received: Apr 11, 2014
Revised: Sep 4, 2014
Accepted: Sep 17, 2014

KEYWORDS

acupoint injection;
acupuncture;
bone marrow
suppression;
chemotherapy;
moxibustion

Abstract

The aim of this study is to review current studies on the effect of acupuncture therapy on bone marrow suppression after chemotherapy. The authors of the present paper have searched related literature over the past 10 years at home and abroad, analyzing the features and the effects of acupuncture therapy (including acupuncture, moxibustion, point injection, point application, etc.) for treating myelosuppression after tumor chemotherapy. We also discuss the year of publication, document type, acupuncture therapy, acupoint selection, and adverse effects with figures. We analyzed 159 articles related to acupuncture therapy from 2004 to 2013, and the analysis revealed that point injection was the most frequently used therapy for clinical applications, and that Zusanli (ST36) was the most frequently used acupoint. The results showed that some problems regarding the design method, acupoint selection, and acupuncture intervention measure existed in those research studies. We hope to provide readers with an overall and objective understanding of acupuncture and moxibustion therapy for treating myelosuppression after tumor chemotherapy.

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1. Introduction

Bone marrow suppression is one of the common side effects after antineoplastic chemotherapy, including thrombocytopenia, leukopenia, and lymphopenia [1,2]. For these side effects, existing drug treatments are expensive and the effects remain only for a short period of time. In addition, it can cause rashes, bone pain, fever, and other adverse reactions. It may also increase the damage of bone marrow cells and stimulate certain malignant cell growth, which makes the chemotherapy subject to certain restrictions in the clinical application [3,4]. In recent years, the related clinical trials and preliminary animal studies indicate that acupuncture therapy has a good synergistic effect during chemotherapy, and can effectively alleviate myelosuppression caused by chemotherapy, and the cost of therapy is relatively cheap, having fewer side effects [5]. This paper summarizes the research status of the past 10 years at home and abroad on the impact of acupuncture therapy on bone marrow suppression after chemotherapy, and also analyses the existing problems to provide a valuable reference for further research.

2. Materials and methods

The data were from the online version of China Knowledge Network), Wan Fang Database, Weipu database of Chinese journal, PubMed. ("acupuncture" OR "acupuncture" OR "moxibustion" OR "electro acupuncture" OR "electroacupuncture" OR "needle" OR "catgut implantation" OR "point injection" OR "point application" OR "cupping") AND ("bone marrow suppression" OR "myelosuppression" OR "leucopenia") were retrieved as the medical subject headings from January 2004 to June 2013. Literature inclusion criteria were: (1) treatment with acupuncture therapy (including acupuncture, moxibustion, electroacupuncture, point injection, acupoint application, etc.); and (2) observation of clinical efficacy and experimental research on bone marrow suppression after chemotherapy. Duplicate documents, repeated documents, and repeated use of published literature in each database were excluded. All articles were assessed by two literature retrieval personnel, respectively, to extract data by the following aspects: the titles of the document, year of publication, document types, acupuncture therapy, acupoint selection, outcome measures, and adverse events; and were entered in an Excel table. In the process of different therapy processes, different appellation were used, such as "medicinal vesiculation", "Ginger moxibustion", "Long snake moxibustion", etc., which were put under the "moxibustion" statistics; and then analyzed and summarized.

3. Results

3.1. Literature distribution

There were 159 articles by using the above search strategy, which included clinical trials ($n = 108$), experimental studies ($n = 20$), reviews ($n = 19$), meeting

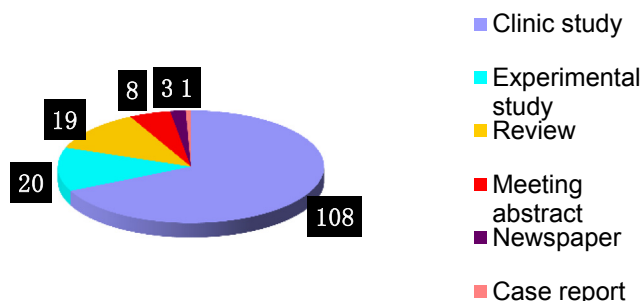


Figure 1 Number of different document types in 159 articles.

abstracts ($n = 8$), newspapers ($n = 3$), and a case report ($n = 1$) (Fig. 1).

There were five foreign literatures: two clinical research literatures, and three reviews comprising 3% of the total literature. There were seven randomized controlled trials and three quasi-randomized controlled trials. Regarding the literature published from 2004 to 2013, the numbers of articles published per year were 12, 16, 21, 15, 14, 13, 21, 13, 19, and 15, respectively, and are displayed in Fig. 2. Further, for a period of 5 years, there was no huge change regarding the literature published.

3.2. The frequency of various acupuncture therapy

Analysis of the 159 articles related to acupuncture therapy from 2004 to 2013 showed that the application of different acupuncture therapies was followed by point injection 78 times, moxibustion 36 times, acupuncture 29 times, acupoint application six times, electroacupuncture five times, and catgut implantation one time (Fig. 3). It may be concluded that point injection is the most frequently used therapy for clinical application.

3.3. Acupoint selection

Acupuncture points in the order of high to low frequency in application were Zusanli (ST36) 106 times, followed distantly by Geshu (BL17) 32 times, Shenshu (BL23) 25 times, Dazhui (DU14) 24 times, Xuehai (SP10) 17 times, Pishu (BL20) 16 times, Sanyinjiao (SP6) 14 times, and Guanyuan (RN4) eight times (Fig. 4). In conclusion, the points of the Stomach Meridian of Foot-Yangming, the Spleen Meridian of Foot-Taiyin, and the Bladder Meridian of Foot-Taiyang were mostly selected.

3.4. Reported adverse effects

There were a total of 51 pieces among 108 clinical research articles which observed the adverse reactions of acupuncture therapy; among which adverse reactions were mentioned in nine pieces. The main reactions were pain, soreness, numbness, palpitation, dizziness, and allergies. There is one article which mentioned that adverse effects were due to the sham acupuncture needle forgotten to be taken out from a control group of patients, and the remaining 41 references reported no adverse reactions.

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