23 (2015) 603–611

Contents lists available at ScienceDirect

Complementary Therapies in Medicine

journal homepage: www.elsevierhealth.com/journals/ctim

Review

Effectiveness and safety of traditional Chinese medicine on stable chronic obstructive pulmonary disease: A systematic review and meta-analysis

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ARTICLE INFO

Article history:
Received 4 November 2014
Received in revised form 27 January 2015
Accepted 15 June 2015
Available online 27 June 2015

Keywords:
Traditional Chinese medicine
Chronic obstructive pulmonary disease
randomized controlled trials
systematic review

ABSTRACT

Objective: This study was intended to evaluate the efficacy and safety of Traditional Chinese Medicine (TCM) on stable chronic obstructive pulmonary disease (COPD).
Method: A systematic review was conducted of clinical trials that compared TCM plus conventional medicine treatment versus conventional medicine treatment alone. Randomized controlled trials (RCTs) of clinical therapeutic studies on COPD by TCM were included. Searches were applied to the following electronic databases: The PubMed、the Cochrane Library、CNKI、CBM and VIP. No blinding and language restriction was used. All trials included were analyzed according to the criteria of the Cochrane Handbook. Review Manager 5.2 software was used for data analysis.
Result: 37 randomized clinical trials enrolling 3212 patients were included. Follow-up duration ranged from 4 weeks to 1.5 years. Compared to conventional medicine treatment alone, TCM plus conventional medicine treatment showed improvement in forced expiratory volume in one second (FEV_1) (MD 0.12 L; 95% CI 0.08 to 0.16), and less exacerbation (OR −0.86; 95% CI −1.13 to −0.60). TCM treatment also led to a statistically improvement in SGRQ score compared to placebo (MD −4.36; 95% CI −7.12 to −1.59). There was statistically significant difference in six-minute walk distance (MD 36.66 meters, 95% CI 24.57 to 48.74) found with TCM compared to placebo.
Conclusion: Among patients with stable COPD, TCM plus conventional medical treatment therapy might be associated with reduction risk of exacerbation, improvement of lung function, better quality of life and higher exercise capacity. The results were limited by the methodological flaws of the studies. High quality studies are needed to provide clear evidence for the future use of TCM.

Contents

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http://dx.doi.org/10.1016/j.ctim.2015.06.015
0965-2299/

1. Introduction

Chronic obstructive pulmonary disease (COPD) continues to be an important cause of morbidity, mortality, and health-care costs worldwide.[1,2] Disability from the disease is substantial, and is expected to increase in the United States and worldwide.[1] Despite these trends, efforts to treat COPD have been disappointing. The only medical therapies that clearly reduce disease progression and mortality are smoking cessation and supplemental oxygen.[3,4] Because currently available treatments have minimal impact on disease progression, a strategy to prevent the development of COPD is a critical priority.

In China, many traditional Chinese medicines (TCM) modalities are regularly used in COPD patients. Several clinical trials[5–7] have shown that TCM might have therapeutic effect for COPD patients including improvement of symptoms, quantity of life and lung function. However, the quality of these trials has not been assessed systematically, Furthermore, A systematic review will be beneficial for current practice and directive for continuing research for new treatment regimens. The objective of this review was to assess positive effects of TCM plus conventional medicine treatment versus conventional medicine treatment in stable COPD in adults.

2. Materials and methods

2.1. Eligibility criteria

Administration of TCM for the treatment of stable COPD was acceptable for inclusion, the control group use conventional treatment, all studies were open publication and raw data were provided; Outcomes selected those the most affect COPD process, such as exacerbation, pulmonary function, the six-minute walk test, dyspnea and quality of life (QOL). JADAD score was used to evaluate the quality of all studies, only JADAD Score equal or greater than 4 were selected for systematic review.

However, we excluded pharmacokinetic studies, nonrandomized evaluations, and animal/laboratory studies, pulmonary rehabilitation studies, acupuncture studies, external application treatment, catgut implantation at acupuncture point, TCM enema and cupping glass treatment.

2.2. Search strategy

We undertook a systematic review of the published work without language restrictions according to the Meta-analysis of observational studies in epidemiology (MOOSE) guidelines.[8] Two reviewers (YXQ and LSY) do thorough literature search, they identified relevant randomized controlled trials independently from 1966 to December 2012, by a systematic search of PubMed, EMBASE, AMED, Chinese BioMedical Literature Database, and the Cochrane Library. Chinese Biomedical Literature Database, China National Knowledge Infrastructure (CNKI), China science and technology journal database (VIP) and Wanfang Data, with the following terms: (Chronic obstructive pulmonary disease OR COPD OR chronic obstructive lung disease OR chronic obstructive airway disease OR chronic obstructive respiratory disease OR chronic bronchitis OR chronic emphysema) AND (Chinese medicine OR traditional Chinese medicine OR Chinese herbal medicine OR Chinese herbal drug OR traditional herbal medicine OR herbal medicine). We used the wild card term "*" to enhance the sensitivity of our search strategy. Reviewers scanned the bibliographies of all retrieved trials and other relevant publications, including reviews and meta-analysis, to ensure a thorough search.

2.3. Studies selection and data extraction

Two reviewers (LB and XY) extracted data and evaluated data's quality and content independently. We conducted data extraction using a standardized procedure. Initially, abstracts were screened to exclude obviously ineligible reports, and then all remaining articles were reviewed. We classified trials and abstracts according to drug, patient characteristics, and study design and therapy duration.

Reviewing study design included following criteria: methods of sequence generation, allocation concealment, and complete description of those who were blinded,[9] use of intention-to-treat analysis and whether the trial was stopped prior to the planned duration, all methodological features capable of impacting effect sizes. Any disagreements were resolved by discussion with a third author (B. Y. P.) to reach a consensus.

The primary outcome measures were exacerbation. The secondary outcome measures included pulmonary function, the six-minute walk test, dyspnea, QOL and adverse events. The data was entered into an electronic database by the two reviewers separately, avoiding duplicate entries existed; in the case where the two entries did not match, an inspection will be conducted, and a third person may be involved for verification. In order to obtain full information regarding conference abstracts, we had contacted the study authors by email and/or telephone communication.

2.4. Data analysis

The statistical package (Rev Man 5.2) provided by the Cochrane Collaboration was used to analyze the data. We also applied a random-effects model as part of sensitivity analysis. Dichotomous