Traditional Chinese medicine in cardiovascular disease prevention

Annie Li, Robert Bobotsis, Christopher Yildiz

Faculty Reviewer: Edmund Lui, PhD (Department of Physiology and Pharmacology)

ABSTRACT

Aim: This review paper aims to familiarize the health practitioner with common components of Traditional Chinese Medicine (TCM) and to provide general clinical recommendations in the context of cardiovascular disease prevention.

Methods: Three databases (EMBASE, PubMed, and Web of Science) were searched for results relating to TCM, cardiovascular disease, and prevention. Clinically relevant results from systemic reviews as well as individual randomized controlled trials (RCTs) were reviewed and presented in this paper.

Conclusion: Currently there is insufficient or conflicting evidence for the use of TCM in cardiovascular disease prevention.

INTRODUCTION

Currently, there is an increase in the uptake of complementary and alternative medicine in patient care.¹ Traditional Chinese medicine (TCM) is one form of complementary and alternative medicine. It uses a combination of 5 treatment modalities, such as herbal medicines and mind and body practices, to treat or prevent health concerns.² Of these 5 treatment modalities, this paper will review herbal medicines, traditional Chinese exercises, and acupuncture in relation to primary, secondary and tertiary prevention of cardiovascular disease prevention.

The overarching goal of TCM is to prescribe appropriate treatment modalities based on the patient's syndrome, basic body constitution, and disease differentiation.³ Herbal medicines consist of single ingredients or combinations of plants minerals and animal preparations believed to be bioactive. According to TCM theory, herbal medicines have different energy, temperature, flavour, and tendencies, which form the basis of their medicinal value.⁴ For example, berberine is derived from a variety of plants (such as *Berberis vulgaris*), and in TCM it has the properties of reducing heat (temperature) and promoting dryness (tendencies).⁵

Traditional Chinese exercises (TCE) combines a set of movements, postures, breathing, and meditation to improve the flow of the body's energy (qi).⁶ The main types of TCE are tai chi and qigong. Tai chi is a highly choreographed, lengthy, and complex series of movements (common tai chi styles include Wu, Yang, and Chen).⁷ Qigong, on the other hand, has 3 main components: mind regulation, body regulation, and breath regulation. The purpose of qigong is to use gentle, focused exercises for the body and mind to increase and restore the flow of qi.⁸ Acupuncture is a technique where practitioners stimulate a certain combination of acupoints by inserting thin needles through the skin or by electro- or laser stimulation to

treat disease.⁹ For example, stimulating 1 inch proximally from the wrist just medial to the radial pulse (at Neguan pcVI) can modify cardiac function.¹⁰

METHODS

Literature reviewed for this paper was obtained from three databases: EMBASE, PubMed, and Web of Science (current as of April 2016). Keywords used in this search were traditional Chinese medicine, Chinese medicine, tai chi, qigong, acupuncture, herb, AND cardiovascular disease AND primary prevention, secondary prevention, tertiary prevention, and rehabilitation. Search results were limited to human subjects, clinical trials or reviews, English language, and full text articles. Further selection was done by the authors based on clinical relevance and quality. Clinically relevant results from selected systemic reviews as well as individual randomized controlled trials (RCTs) are presented in this review.

RESULTS

Primary prevention: Primary prevention of cardiovascular disease aims to reduce risk of disease by addressing predisposing determinants of health.¹¹ TCE (tai chi and qigong) was the main TCM modality studied for primary cardiovascular disease prevention. The result of recent Cochrane systematic reviews of RCTs involving healthy and at-risk individuals found insufficient and inconclusive evidence with respect to tai chi (lasting at least 3 months)¹² and any type of qigong.⁸ It is important to note that none of the studies included in the systematic reviews had any adverse events to report.^{8,12}

Clinical relevance: There is currently insufficient data to actively promote TCE as a public health measure to reduce the risk of cardiovascular disease.

Secondary prevention: Secondary prevention of cardiovascular disease aims to control cardiovascular disease progression by detecting and treating preclinical changes of the disease.¹¹ With respect to TCE, a meta-analysis reported potential for qigong (Baduanjin style) to decrease systolic and diastolic blood pressure in Asian, hypertensive patients.¹³ A systematic review reported that tai chi had no effect on glucose metabolism, but may decrease systolic and diastolic blood pressure in patients with coronary artery disease or hypertension and improve serum lipid profiles in select patients.¹³ Furthermore, the authors of the above systematic review reported one RCT that showed a higher adherence for home tai chi compared to walking or aerobic dance in a population of hypertensive patients.¹³

With respect to herbal medicines, a Cochrane systematic review reported that the most common herbs used by patients with

impaired glucose tolerance were *huang qi*, *shan yao*, *ge gen*, and berberine.¹⁴ Although articles reviewed by Grant et al mainly involved Chinese populations and were of low-quality methodology, half of the articles reviewed suggested better blood glucose results when Chinese herbal medicines were used in combination with lifestyle modification.¹⁴ Additionally, Chinese red yeast extract has been studied as a cholesterol-lowering agent, but inadequate reporting of methods make these poor-quality studies.¹⁵ Overall, nonstandardized preparations and complex compositions of the materials being tested makes evaluating herbal medicines difficult especially in meta-analysis, where ingredient compositions may differ from trial to trial.

Clinical relevance: Although there is insufficient evidence to promote TCM as front-line methods of secondary prevention in cardiovascular disease, tai chi may be considered as an alternative to walking or aerobic dance if the patient is nonadherent.

Tertiary prevention: Tertiary prevention aims to mitigate the impact of disease on patient function, longevity, and quality of life.¹¹ With respect to TCE, tai chi and qigong were identified in the literature as the main rehabilitation modalities. Implementing tai chi into rehabilitation schedules of stable cardiac patients improved their self-perceived symptom severity compared to a control group that received standard medical supervision and drug treatment¹⁶ and increased peak $\dot{V}O_2$ compared to a group performing full-body stretching exercises.¹⁷ Implementation of tai chi in the months following stroke onset demonstrated potential in decreasing fall rates (compared to those receiving only phone follow-ups)¹⁸ and improving balance (compared to those receiving breathing and stretching exercises, active mobilization of muscles, and memory and reasoning exercises).¹⁹ In a single-blinded RCT involving patients with cerebral vascular disorder, Wang et al found no differences in cognitive effect, general health, and sleep quality between tai chi and a combination of nonresistance and resistance training rehabilitation.²⁰

With respect to herbal medicines, in a double-blinded RCT pilot trial, Neuroaid (a combination of 9 plant and 5 animal components) did not show a significant difference from placebo when used in the rehabilitation of poststroke patients.²¹ In stroke patients with depression, Li et al reported the Chinese herbal medicine Free and Easy Wanderer Plus (FEWP), a combination of 8 traditional Chinese herbs,²² may improve depression scores when compared to placebo. However, no differences were seen between FEWP when compared to fluoxetine (an SSRI).²³ A systemic review by Zhang et al suggested that the salvia droplet pill (a combination of extractions from *danshen*, *sangi*, and *borneol*) may have pain relieving effects for angina pectoris, although the results are inconclusive due to low-quality methodology.²⁴

There has been much interest in applying acupuncture as a method of tertiary prevention for stroke patients. Despite much research, many systematic reviews on this topic have found inconclusive or only slightly favourable²⁵ evidence, with many calling for more rigorous research.²⁵⁻²⁸ Methodological deficiencies include heterogeneous study populations²⁹ and variability in acupuncture

methodology and practice (eg, differences in stimulation methods, inconsistent appropriateness of sham placebo control, geographical acupuncture variations, and variations in treatment plan).^{29,30} Individual studies assessing patient function^{30,31} and poststroke depression³² did not reach clinically significant conclusions.

Clinical relevance: With further evidence, tai chi and qigong may play a role in tertiary prevention of cardiovascular disease. Currently, the authors suggest that it may be used under careful supervision as a last resort in cardiovascular rehabilitation. There is, however, insufficient evidence for the use of herbal medicines and acupuncture in tertiary prevention of cardiovascular disease. Use of acupuncture in poststroke rehabilitation is currently not recommended. If, however, the patient insists on trying the treatment, proceed with extra caution in geriatric patients, as they are more likely to have comorbidities, to be on anticoagulants, and to find the experience unpleasant.³³

CONCLUSIONS

Although there is potential for the application of TCM in the 3 stages of cardiovascular disease prevention, currently there is insufficient or conflicting evidence for their use. With the uptake of more rigorous research design and reporting, it is expected better evidence will become available in the coming years.

LIMITATIONS

The literature reviewed for this paper were not evaluated by 2 independent authors to assess for completeness, nor were the original articles cited in systematic reviews and meta-analyses evaluated independently. Furthermore, this review does not take into account the use of combinations of TCM treatment modalities and standard Chinese medicine practice.

REFERENCES

- Davidson P, Hancock K, Leung D, et al. Traditional Chinese medicine and heart disease: what does Western medicine and nursing science know about it? *Eur J Cardiovasc Nurs*. 2003 Sep 2;2(3):171-81.
- Traditional Chinese medicine: in depth [Internet]. Maryland: National Center for Complementary and Integrative Health (NCCIH); 2009 [cited 2016 Apr 10]. Available from: <https://nccih.nih.gov/health/whatis/tcm/chinesemed.htm>
- Kusaka K, Itoh T, Morimoto S, et al. Traditional Chinese medicine and Kampo: a review from the distant past for the future. *J Int Med Res*. 2006 May-Jun; 34(3):231-9.
- Li Z, Xu C. The fundamental theory of traditional Chinese medicine and the consideration in its research strategy. *Front Med*. 2011 Jun;5(2):208-11.
- Health Sciences Authority [Internet]. Singapore: Singapore government. HAS allows Chinese proprietary medicines containing berberine for sale in Singapore; 2013 Jan 1 [Cited 2016 Apr 20]. Available from: http://www.hsa.gov.sg/content/hsa/en/News_Events/Press_Releases/2012/hsa_allows_chinese.html
- Gates DJ, Mick D. Qigong: an innovative intervention for rural women at risk for type 2 diabetes. *Holist Nurs Pract*. 2010 Nov-Dec;24(6):345-54.
- Jahnke R, Larkey L, Rogers C, et al. A comprehensive review of

- health benefits of qigong and tai chi. *Am J Health Promot*. 2010 Jul-Aug;24(6):e1-e25.
8. Hartley L, Lee MS, Kwong JS, et al. Qigong for the primary prevention of cardiovascular disease. *Cochrane Database Syst Rev*. 2015 Jun 11;6:CD010390.
9. Acupuncture: in depth [Internet]. Maryland: National Center for Complementary and Integrative Health (NCCIH); 2008 [cited 2016 Apr 10]. Available from: <https://nccih.nih.gov/health/acupuncture/introduction>
10. Wang J, Zhou Q, Xu G, et al. Effect of acupuncture at acupoints Neiguan (PC 6) and Ximen (PC 4) on the left cardiac function in the patients with coronary heart disease. *J Acupunct Tuina Sci*. 2006;4(1):40-1.
11. AFMC primer on population health: a virtual textbook on public health concepts for clinicians [Internet]. Canada: The Association of Faculties of Medicine of Canada; [cited 2016 Apr 10]. Available from: <http://phprimer.afmc.ca/Part1-TheoryThinkingAboutHealth/Chapter4BasicConceptsInPreventionSurveillanceAndHealthPromotion/Thestagesofprevention>
12. Hartley L, Flowers N, Lee MS, et al. Tai chi for primary prevention of cardiovascular disease. *Cochrane Database Syst Rev*. 2014 Apr 9;4:CD010366.
13. Xiong X, Wang P, Li S, et al. Effect of Baduanjin exercise for hypertension: a systematic review and meta-analysis of randomized controlled trials. *Maturitas*. 2015 Apr;80(4):370-8.
14. Grant SJ, Bensoussan A, Chang D, et al. Chinese herbal medicines for people with impaired glucose tolerance or impaired fasting blood glucose. *Cochrane Database Syst Rev*. 2009 Oct 7;(4):CD006690.
15. Liu J, Zhang J, Shi Y, et al. Chinese red yeast rice (*Monascus purpureus*) for primary hyperlipidemia: a meta-analysis of randomized controlled trials. *Chin Med*. 2006 Nov 23;1:4.
16. Barrow DE, Bedford A, Ives G, et al. An evaluation of the effects of Tai Chi Chuan and Chi Kung training in patients with symptomatic heart failure: a randomised controlled pilot study. *Postgrad Med J*. 2007 Nov;83(985):717-21.
17. Nery RM, Zanini M, de Lima JB, et al. Tai Chi Chuan improves functional capacity after myocardial infarction: a randomized clinical trial. *Am Heart J*. 2015 Jun;169(6):854-60.
18. Taylor-Piliae RE, Hoke TM, Hepworth JT, et al. Effect of tai chi on physical function, fall rates and quality of life among older stroke survivors. *Arch Phys Med Rehabil*. 2014 May;95(5):816-24.
19. Au-Yeung SS, Hui-Chan CW, Tang JC. Short-form tai chi improves standing balance of people with chronic stroke. *Neurorehabil Neural Repair*. 2009 Jun;23(5):515-22.
20. Wang W, Sawada M, Noriyama Y, et al. Tai chi exercise versus rehabilitation for the elderly with cerebral vascular disorder: a single-blinded randomized controlled trial. *Psychogeriatrics*. 2010 Sep;10(3):160-66.
21. Kong KH, Wee SK, Ng CY, et al. A double-blind, placebo-controlled, randomized phase II pilot study to investigate the potential efficacy of the traditional chinese medicine Neuroaid (MLC 601) in enhancing recovery after stroke (TIERS). *Cerebrovasc Dis*. 2009;28(5):514-21.
22. Xiao Yao Wan (Free and Easy Wanderer) [Internet]. Chinese Herbs Healing; 2012 [cited 2016 Mar 29]. Available from: <http://www.chineseherbshealing.com/xiao-yao-wan/>
23. Li LT, Wang SH, Ge HY, et al. The beneficial effects of the herbal medicine Free and Easy Wanderer Plus (FEWP) and fluoxetine on post-stroke depression. *J Altern Complement Med*. 2008 Sep;14(7):841-6.
24. Zhang JH, Shang HC, Gao XM, et al. Compound salvia droplet pill, a traditional Chinese medicine, for the treatment of unstable angina pectoris: a systematic review. *Med Sci Monit*. 2008 Jan;14(1):RA1-7.
25. Sze FK, Wong E, Kevin KH, et al. Does acupuncture improve motor recovery after stroke? A meta-analysis of randomized controlled trials. *Stroke*. 2002 Nov;33(11):2604-19.
26. Wu P, Mills E, Moher D, et al. Acupuncture in poststroke rehabilitation: a systematic review and meta-analysis of randomized trials. *Stroke*. 2010 Apr;41(4):e171-9.
27. Lee SH, Wong YO, Chu MK, et al. Acupuncture in managing of spasticity of post stroke survivor: a systematic review. Poster session presented at: International stroke conference and nursing symposium; 2012 Feb 1-3 ; New Orleans, LA.
28. Lim SM, Yoo J, Lee E, et al. Acupuncture for spasticity after stroke: a systematic review and meta-analysis of randomized controlled trials. *J Evid Based Complementary Altern Med*. 2015 Jan;2015:870398.
29. Kong JC. Acupuncture for functional recovery after stroke: a systematic review of sham-controlled randomized clinical trials. *CMAJ*. 2010 Nov;182(16):1723-9.
30. Park J, White AR, James MA, et al. Acupuncture for subacute stroke rehabilitation: a sham-controlled, subject- and assessor-blind, randomized trial. *Arch Intern Med*. 2005 Sep 26;165(17):2026-31.
31. Johansson BB, Haker E, von Arbin M, et al. Swedish Collaboration on Sensory Stimulation After Stroke. Acupuncture and transcutaneous nerve stimulation in stroke rehabilitation: a randomized, controlled trial. *Stroke*. 2001 Mar;32(3):707-13.
32. Man SC, Hung BH, Ng RM, et al. A pilot controlled trial of a combination of dense cranial electroacupuncture stimulation and body acupuncture for post-stroke depression. *BMC Complement Altern Med*. 2014 Jul;14:255-63.
33. Schuler MS, Durdak C, Höl NM, et al. Acupuncture treatment of geriatric patients with ischemic stroke: a randomized, double-controlled, single-blind study. *J Am Geriatr Soc*. 2005 Mar;53(3):549-50.