Chinese Journal of Integrative Medicine
Available online at link.springer.com/journal/11655
Journal homepage: www.cjim.cn/zxyjhen/zxyjhen/ch/index.aspx
E-mail: cjim_en@cjim.cn

Original Article

Effectiveness of Integrative Medicine Therapy on Coronary Artery Disease Prognosis: A Real-World Study*

ZHAO Kang[1], TIAN Jin-fan[1], ZHAO Cong[1], YUAN Fei[1], GAO Zhu-ye[2], LI Li-zhi[2], LIU Hong-xu[3], WANG Xian[4], GE Chang-jiang[1], and LU Shu-zheng[1]

ABSTRACT **Objective:** To evaluate the effectiveness of integrative medicine (IM) on patients with coronary artery disease (CAD) and investigate the prognostic factors of CAD in a real-world setting. **Methods:** A total of 1,087 hospitalized patients with CAD from four hospitals in Beijing, China were consecutively selected between August 2011 and February 2012. The patients were assigned to two groups based on the treatment: Chinese medicine (CM) plus conventional treatment, i.e., IM therapy (IM group); or conventional treatment alone (CT group). The endpoint was major adverse cardiac events [MACE; including cardiac death, myocardial infarction (MI), and revascularization]. **Results:** A total of 1,040 patients finished the 2-year follow-up. Of them, 49.4% (514/1,040) received IM therapy. During the 2-year follow-up, the total incidence of MACE was 11.3%. Most of the events involved revascularization (9.3%). Cardiac death/MI occurred in 3.0% of cases. For revascularization, logistic stepwise regression analysis revealed that age ⩾ 65 years [odds ratio (OR), 2.224], MI (OR, 2.561), diabetes mellitus (OR, 1.650), multi-vessel lesions (OR, 2.554), baseline high sensitivity C-reactive protein level ⩾ 3 mg/L (OR, 1.678), and moderate or severe anxiety/depression (OR, 1.849) were negative predictors (P<0.05); while anti-platelet agents (OR, 0.422), β-blockers (OR, 0.626), statins (OR, 0.318), and IM therapy (OR, 0.583) were protective predictors (P<0.05). For cardiac death/MI, age ⩾ 65 years (OR, 6.389) and heart failure (OR, 7.969) were negative predictors (P<0.05), while statin use (OR, 0.323) was a protective predictor (P<0.05) and IM therapy showed a beneficial tendency (OR, 0.587), although the difference was not statistically significant (P=0.218). **Conclusion:** In a real-world setting, for patients with CAD, IM therapy was associated with a decreased incidence of revascularization and showed a potential benefit in reducing the incidence of cardiac death or MI.

KEYWORDS coronary artery disease, Chinese medicine, integrative medicine, effectiveness, real-world study

Despite improvements in revascularization and pharmacological therapy for coronary artery disease (CAD), it remains a significant threat to global health. Recurrent acute cardiovascular events, hospital readmission, and unfavorable quality of life torment patients with CAD. Hence, the further development of effective therapeutic approaches is needed. In recent decades, the potential benefit of complementary and alternative medicine (CAM) to improve the prognosis of patients with CAD has drawn increasing attention. Meanwhile the use of CAM by physicians and patients has also increased markedly. For quite some time, Eastern-Western integrative medicine (IM) therapy for CAD has been prevalent in China. To date, various randomized controlled trials (RCTs),[1-7] systematic reviews,[8-10] and a prospective cohort study[11] have been conducted to evaluate the benefit of IM for CAD from diverse aspects, and most showed positive findings. Nevertheless, the effectiveness of IM therapy for treating CAD in the real world remains unclear.

*Supported by the Capital Foundation of Medical Developments Project (No. SF-2009-I-09), Beijing Traditional Chinese Medicine Science and Technology Project (No. JJ2014-22), and Beijing Natural Science Foundation Project (No. 7152047), China
1. Department of Cardiology, Beijing Anzhen Hospital Affiliated to Capital Medical University—Beijing Institute of Heart, Lung and Blood Vessel Diseases, Beijing (100029), China; 2. Center for Cardiovascular Diseases, Xiyuan Hospital, China Academy of Chinese Medical Sciences, Beijing (100091), China; 3. Department of Cardiology, Beijing Chinese Medicine Hospital Affiliated to Capital Medical University, Beijing (100053), China; 4. Department of Cardiology, Dongzhimen Hospital Affiliated to Beijing University of Traditional Chinese Medicine, Beijing (100600), China
Correspondence to: Prof. GE Chang-jiang, Tel: 86-10-64456473, E-mail: cjge1116@163.com; LU Shu-zheng, Tel: 86-10-64456473, E-mail: shuzheng@medmail.com
DOI: https://doi.org/10.1007/s11655-016-2454-9

Chin J Integr Med 2019 Jan;25(1):9-15

Using real-world studies, we can obtain further evidence that is consistent with clinical practice.[12] Therefore, this prospective real-world study of hospitalized patients with CAD was conducted to evaluate the effectiveness of IM therapy on CAD by investigating the 2-year follow-up incidence of major adverse cardiac events (MACE).

METHOD

Diagnostic Criteria

The diagnostic criteria of CAD patients were evaluated by relevant clinical guidelines, for example, the guidelines for the management of patients with angina pectoris and MI published by the Chinese Society of Cardiology of Chinese Medical Association and the American Heart Association and American College of Cardiology,[13-15] clinical guidelines for the diagnosis and treatment of acute and chronic heart failure,[16,17] and guidelines for the management of hypertension[18] and dyslipidemia.[19]

Inclusion and Exclusion Criteria

Inclusion criteria included: (1) hospitalization for angina pectoris, myocardial infarction (MI), heart failure, or arrhythmia; and (2) meeting one or more of the following conditions: (a) coronary artery stenosis >50% confirmed by coronary angiography; (b) acute MI diagnosed in the hospital; or (c) old MI; (3) signed informed consent forms and follow-up agreements before enrolling.

Exclusion criteria included: (1) severe mental disease; (2) advanced malignancy; (3) serious end-stage organ lesions; (4) refusal to participate in follow-up; and (5) currently pregnant or breastfeeding.

Participants

Between August 2011 and February 2012, we consecutively identified hospitalized patients with CAD in the cardiovascular departments of four hospitals in Beijing, China, including Beijing Anzhen Hospital Affiliated to Capital Medical University, Xiyuan Hospital of China Academy of Chinese Medical Sciences, Beijing Chinese Medicine Hospital Affiliated to Capital Medical University, and Dongzhimen Hospital Affiliated to Beijing University of Chinese Medicine. The study protocol was approved by the ethics review board of Beijing Anzhen Hospital and the Institutional Human Experimentation Committee in accordance with the principles described in the Declaration of Helsinki and Tokyo for humans.

Study Design and Intervention

The treatment programs of hospitalized patients with CAD including medication decisions and the option of revascularization were decided by physicians at each center who were not involved in the study. After the participants were discharged, their treatment decisions were made by the responsible physicians without restriction. The participants were followed up by clinical researchers at each study center. The researchers were all trained and passed a relevant examination. The data were collected and accurately recorded in a case report form (CRF). The data were managed and the statistical analyses were performed solely by data handlers and data analysts at Beijing University of Chinese Medicine. IM therapy means that the patients accepted the conventional treatment of Western medicine and the treatment of Chinese herbal medicine including herbal-based injection and Chinese patent medicine as well as decoction for at least 7 days in the hospital or 3 months out of the hospital.

Clinical Follow-up

The in-hospital and follow-up data were recorded on the CRF by researchers at each center. The follow-up was mainly done by telephone with supplemental outpatient clinic and home visits as needed. The first follow-up occurred at 30 days, followed by once every 3 months. When participants reached the primary endpoint or 2 years, the follow-up was terminated.

Observation Index

Each patient's demographic data, general clinical condition, medication use, anxiety/depression scores, and cardiovascular events were observed.

Definition of MACE

The endpoint was MACE, the composite of cardiac death, MI, or revascularization. Other cardiovascular events included re-hospitalization due to unstable angina, ischemic stroke, or major bleeding. The endpoint was adjudicated by independent outcome committees whose members had no knowledge of the research purpose or the patient's treatment status.

Therapeutic Evaluation

The therapeutic status of CAD patients were

evaluated by relevant clinical guidelines.[13-19] The patients' psychological status were evaluated by the Self-Rating Anxiety Scale and Self-Rating Depression Scale. The degree of anxiety or depression disorders was identified by average standard score (for anxiety: scores of 50–59 were assessed as mild, 60–69 were moderate, and >70 were severe; for depression: 53–62 were considered mild, 63–72 were moderate, and >73 were severe).

Statistical Analysis

Statistical analyses were performed using SPSS 17.0 software. For continuous variables, mean ± standard deviation ($\bar{x} \pm s$) was used for normally distributed data, while median with interquartile range (IQR) was calculated for abnormally distributed data. Student's *t*-test or the Wilcoxon rank-sum test was used, as appropriate, for the analyses of intergroup differences. For categorical variables, the data were expressed as frequencies with percentages, while intergroup differences were compared by the Chi-square test. Binary logistic regression analysis was conducted to determine the association between 22 pre-identified covariates of interest and MACE. Two-sided *P* values less than 0.05 were considered statistically significant.

RESULT

Demographics and Clinical Characteristics of Study Population

Totally 1,087 hospitalized patients with CAD were consecutively identified. Among the patients, 4 had severe mental disease, 8 suffered from advanced malignancies, 16 had serious end-stage organ lesions, and 19 refused to participate in the follow-up. All of the above patients were excluded from the study. Ultimately 1,040 patients were recruited and completed the follow-up. Of these 1,040 participants, 516 received IM therapy and 524 received conventional treatment. Among them, 577 participants also had anxiety or depression (Figure 1).

The baseline characteristics of the participants are shown in Table 1. The two groups were not well matched. The patients in the IM group were significantly older than those in the CT group, while the proportions of women and patients with chronic CAD were significantly higher than those in the CT group. In addition, there was a higher usage rate of anti-platelet agents and nitrate medications in the CT group than in the IM group.

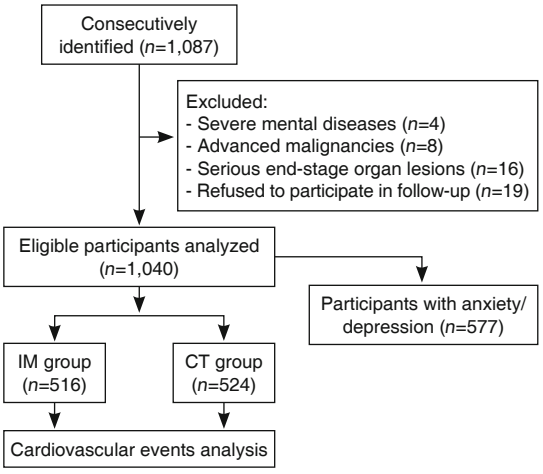

Figure 1. Flow Diagram of CAD Study

Treatment Status

The rates of each medication's use, coronary artery revascularization, and Chinese herbal medicine (IM therapy) are shown in Figure 2.

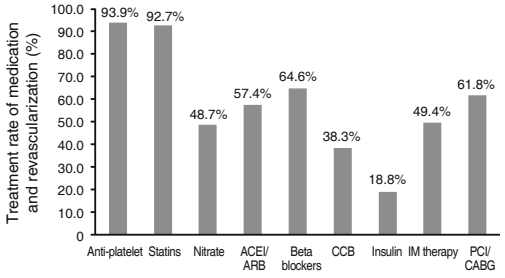

Figure 2. Treatment Status of CAD Patients

Rate of Anxiety and Depression Disorders

During the follow-up period, 47.8% of the participants also had anxiety; meanwhile, 39.4% of the participants had depression (Table 2).

Major Adverse Cardiac Events

During the follow-up period, the total incidence of MACE was 11.3%. Revascularization was the most common (9.3%). Cardiac death or MI occurred in only 3.0% of cases. The rate of MACE in the IM group was significantly lower than that in the conventional treatment group within 2 years (9.1% *vs*. 13.4%, Table 3). Because the baseline characteristics between the two groups were not matched, the difference in the MACE rate between the two groups needed adjustment by multiple-factor analysis (shown below).

Prognostic Factors Analysis

The prognostic factors analysis involved 22 variants. Table 4 displayed the rough result of logistic

Table 1. Patients' Baseline Clinical Characteristics [Case (%)]

Characteristics	IM group (*n*=514)	CT group (*n*=526)	*P*
Age [Year, media (IQR)]	61 (55–69)	58 (52–67)	<0.001
Male	352 (68.5)	402 (76.4)	0.004
Clinical presentation			
Chronic CAD	194 (37.7)	154 (29.3)	0.004
ACS	320 (62.3)	372 (70.7)	
Old myocardial infarction	158 (30.7)	172 (32.7)	0.497
Smoking history	253 (49.2)	292 (56.1)	0.027
Family history	99 (19.3)	76 (14.4)	0.038
BMI [kg/m^2, media (IQR)]	25.8 (23.5–28.0)	26.0 (24.2–28.5)	0.057
Complicating diseases			
Hypertension	352 (68.5)	340 (64.6)	0.189
Dyslipidmia	274 (53.3)	252 (47.9)	0.082
Diabetes mellitus	169 (32.9)	140 (26.6)	0.027
Stroke	48 (9.3)	44 (8.4)	0.580
Heart failure	10 (1.9)	16 (3.0)	0.258
Arrhythmia	7 (1.4)	16 (3.0)	0.065
Peripheral artery disease	18 (3.5)	12 (2.3)	0.240
Chronic renal insufficiency	1 (0.2)	8 (1.5)	0.048
No. of diseased coronary arteries			
1	261 (50.8)	254 (48.3)	
2	153 (29.8)	162 (30.8)	0.655
3	90 (17.5)	103 (19.6)	
Unknown	10 (1.9)	7 (1.3)	
Lesion			
LAD	350 (69.4)	364 (70.1)	0.810
LCX	213 (42.3)	245 (47.2)	0.112
RCA	250 (49.6)	258 (49.7)	0.972
LM	36 (7.1)	30 (5.8)	0.375
Status of treatment			
PCI/CABG	327 (63.6)	316 (60.1)	0.240
Antiplatelet agents	461 (89.7)	516 (98.1)	<0.001
Nitrate medications	234 (45.5)	272 (51.7)	0.046
ACEI/ARB	276 (53.7)	321 (61.0)	0.017
β - Blockers	344 (66.9)	328 (62.4)	0.123
CCB	192 (37.4)	206 (39.2)	0.548
Statins	478 (93.0)	486 (92.4)	0.710
Insulin	104 (20.2)	91 (17.3)	0.226
Biochemical criterion			
Hs-CRP [Media (IQR)]	1.47 (0.66-3.90)	1.92 (0.68–4.69)	0.517

Notes: ACS: acute coronary syndrome; BMI: body mass index; LAD: left anterior descending artery; LCX: left circumflex artery; RCA: right coronary artery; LM: left maincoronaryartery; PCI: percutaneous coronary intervention; CABG: coronary artery bypass grafting; ACEI: angiotensin-converting enzyme inhibitors; ARB: angiotensin receptor blockers; CCB: calcium channel blockers; hs-CRP: high sensitivity C-reactive protein; the same below

Table 2. Rates of Anxiety and Depression Disorders [Case (%)]

Disorder	Non	Mild	Moderate	Severe
Anxiety	527 (52.2)	285 (28.2)	143 (14.2)	55 (5.4)
Depression	612 (60.6)	210 (20.8)	133 (13.2)	55 (5.4)

Table 3. Cardiovascular Events during 2-Year Clinical Follow-Up [Case (%)]

Event	IM group (516 cases)	CT group (524 cases)	Total
MACE	47 (9.1)	70 (13.4)	117 (11.3)
Cardiac death or MI	12 (2.3)	19 (3.6)	31 (3.0)
Cardiac death	2 (0.4)	9 (1.7)	11 (1.1)
MI*	11 (2.1)	11 (2.1)	22 (2.1)
Revascularization△	37 (7.2)	60 (11.5)	97 (9.3)
Other events			
Re-hospitalization due to unstable angina	39 (7.6)	65 (12.4)	104 (10.0)
Ischemic stroke	12 (2.3)	10 (1.9)	22 (2.1)
Major bleeding	2 (0.4)	2 (0.4)	4 (0.4)

Notes: *Including 2 fatal MI cases (1 in each group). △Including 11 revascularization cases due to MI (2 in the IM group and 9 in the CT group)

regression analysis for these variants, in which IM therapy showed a beneficial tendency for decreasing the incidence of cardiac death or MI events [odds ratio (OR): 0.587; 95% confidence interval (CI): 0.251, 1.371; *P*=0.218].

According to the introduced criteria (*P*<0.05) and exclusive criteria (*P*>0.10), the statistically significant variants were introduced successfully and retained in forward conditional stepwise regression equation (Table 5). For revascularization, the logistic stepwise regression analysis revealed that age ⩾ 65 years, MI, diabetes mellitus, multi-vessel lesions, baseline high sensitivity C reactive protein (hs-CRP) level ⩾ 3 mg/L, moderate or severe anxiety/depression were negative predictors, while anti-platelet agent use, β-blockers, statin use, and IM therapy were protective predictors. For cardiac death or MI, age ⩾65 years, heart failure were negative predictors, while statin use was a protective predictor.

DISCUSSION

Extensive studies of the pathophysiological mechanisms of CAD lead to emerging innovations in therapy methods. Evidence-based medicine has demonstrated that the active and reasonable application of statins, anti-platelet drugs, β-blockers,

Table 4. Analysis of Predictive Factors Using Multivariate Logistic Regression

Variants	Revascularization, OR (95% CI)	*P*	Cardiac death or MI, OR (95% CI)	*P*
Age≥65 years	2.390 (1.439–3.969)	0.001	9.296 (3.647–23.695)	<0.001
Sex	0.914 (0.474–1.765)	0.914	0.485 (0.159–1.478)	0.203
Smoke	1.429 (0.813–2.512)	0.215	1.164 (0.464–2.920)	0.747
MI	2.299 (1.407–3.757)	0.001	2.012 (0.843–4.800)	0.115
Heart failure	1.768 (0.570–5.481)	0.324	5.397 (1.192–24.428)	0.029
Stroke	1.208 (0.602–2.422)	0.595	1.221 (0.412–3.616)	0.719
Arrhythmia	1.359 (0.331–5.586)	0.670	2.998 (0.315–28.579)	0.340
hypertension	1.489 (0.840–2.641)	0.173	2.284 (0.761–6.862)	0.141
Diabetes mellitus	1.579 (0.973–2.563)	0.065	1.992 (0.853–4.651)	0.111
Peripheral artery disease	1.273 (0.435–3.726)	0.659	1.075 (0.177–6.550)	0.937
Family history	1.417 (0.804–2.496)	0.228	1.471 (0.542–3.994)	0.448
Chronic renal insufficiency	1.439 (0.218–9.504)	0.705	1.667 (0.160–17.379)	0.669
Multi-vessel lesion	2.498 (1.527–4.085)	<0.001	1.714 (0.718–4.096)	0.225
Baseline hs-CRP≥3mg/L	1.684 (1.059–2.679)	0.028	2.109 (0.938–4.741)	0.071
Moderate or severe anxiety/depression	1.591 (0.963–2.628)	0.070	0.998 (0.396–2.517)	0.996
Anti-platelet agents	0.409 (0.173–0.964)	0.041	0.540 (0.129–2.255)	0.398
ACEI/ARB	0.978 (0.580–1.648)	0.933	0.828 (0.325–2.109)	0.692
Nitrate medications	0.852 (0.525–1.385)	0.519	0.704 (0.301–1.644)	0.417
β - Blockers	0.607 (0.381–0.966)	0.035	0.513 (0.228–1.154)	0.107
Statins	0.366 (0.184–0.727)	0.004	0.243 (0.081–0.725)	0.011
PCI/CABG	0.842 (0.517–1.373)	0.491	0.800 (0.339–1.888)	0.610
IM therapy	0.575 (0.356–0.927)	0.023	0.587 (0.251–1.371)	0.218

Table 5. Analysis of Predictive Factors Using Multivariate Logistic Forward Conditional Stepwise Regression for Revascularization and Cardiac Death or MI

Variants	OR (95% CI)	*P*
Revascularization		
Age ⩾ 65 years	2.224 (1.401–3.530)	0.001
MI	2.561 (1.621–4.047)	<0.001
Diabetes mellitus	1.650 (1.039–2.622)	0.034
Multi-vessel lesion	2.554 (1.597–4.085)	<0.001
Baseline hs-CRP ⩾ 3 mg/L	1.678 (1.069–2.634)	0.025
Anxiety/depression*	1.849 (1.151–2.970)	0.011
Anti-platelet agents	0.422 (0.185–0.965)	0.041
Beta blockers	0.626 (0.398–0.985)	0.043
Statins	0.318 (0.165–0.612)	0.001
IM therapy	0.583 (0.365–0.931)	0.024
Cardiac death or MI		
Age ⩾ 65 years	6.389 (2.874–14.201)	<0.001
Heart failure	7.969 (2.530–25.108)	<0.001
Statins	0.323 (0.120–0.871)	0.025

Note: *Moderate or severe

and angiotensin-converting enzyme inhibitors (ACEI) can significantly reduce the incidence of endpoint events and improve patient prognosis. Moreover, interventional therapy opens up new avenues in CAD treatment and becomes a cutting-edge hot spot in cardiology research. In this study, a multi-factorial analysis associated with endpoint events confirmed that anti-platelet drugs, β-blockers, and statins lowered the incidence of revascularization events. Statins use also reduced the incidence of cardiac death/MI event, a difficult endpoint event in patients with CAD.

Our study mainly involved hospitalized CAD patients in Beijing. The usage rate of anti-platelet drugs and statins was >90%, while the usage rate of ACEI/angiotensin receptor blockers (ARB) and β-blockers was 55%–65%, which was far from satisfactory. We also showed that revascularization treatment failed to exert any statistically significant protective roles, probably due to the large proportion (33.5%) of patients with chronic stable CAD in this study. As the Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation Study[20] revealed, in patients with chronic stable CAD, percutaneous coronary intervention failed to improve prognosis compared to intensive medical treatment.

In this study, multi-factorial analysis also showed that IM therapy reduced the incidence of revascularization events by 41.7% in patients with CAD compared with conventional Western medicine treatment. Meanwhile, it displayed a potentially beneficial trend of simultaneously lowering the incidence of cardiac death/MI events by around 40% compared with conventional treatment, which was consistent with a recent RCT study.[5]

We also discovered that the risk factors that could potentially increase the incidence of endpoint events included old age (≥ 65 years), MI history, heart failure, diabetes, multi-vessel lesions, elevated hs-CRP level (≥3 mg/L), and moderate to severe anxiety or depression, which recaptured the results of previous clinical prognostic analyses.[10,21-24]

CM is widely used in China. We found that IM therapy was efficacious in clinical practice. Due to the unclear mechanisms and the lack of high-quality evidence for evidence-based medicine, CM and other traditional medicines are considered complementary and alternative medicine in Western countries. Therefore, to spread CM to the modern and international stage, we should emphasize the original research of its mechanisms and provide high-quality evidence for evidence-based medicine that fits clinical practice. Our study involved four class A CM and integrative medicine hospitals in Beijing that objectively and accurately reflect the therapeutic and prognosis status of CAD. Our findings confirmed that IM therapy indeed improved the prognosis of patients with CAD. Despite this, real-world research to date of IM therapy for CAD involves only a narrow field and cannot fully demonstrate its features and advantages for preventing and treating CAD. Future studies will focus on the optimization and individualization of interventional strategies, which refer to specific Chinese herbal medicine, interventional timing, and efficacy in patients with various CAD subtypes.

Conflict of Interest

The authors have no conflict of interests to declare.

Author Contributions

Zhao K contributed to the study execution and manuscript drafting. Tian JF and Zhao C contributed to the study execution. Ge CJ and Lu SZ contributed to the study design and manuscript revision. Others authors contributed to the study design.

Acknowledgments

The authors are greatly appreciative of the staff members of all of the participating hospitals for their outstanding efforts: SONG Xian-tao, LIU Hong, ZHOU Yuan, and ZHANG Min of Beijing Anzhen Hospital Affiliated to Capital Medical University; WANG Pei-li, JING Lu, and ZHANG Ying of Xiyuan Hospital, China Academy of Chinese Medical Sciences; CHEN Jia-xing, ZHAO Han-sen, and WANG Zheng-yu of Beijing Chinese Medicine Hospital Affiliated to Capital Medical University; and LIU Jiang-bo, LIU Yu-qing, and MENG Wei of Dongzhimen Hospital Affiliated to Beijing University of Traditional Chinese Medicine.

REFERENCES

1. Ge CJ, Yuan F, Feng LX, Lu SZ, Liu H, Song XT, et al. Clinical effect of Maixuekang Capsule on long-term prognosis in patients with acute coronary syndrome after percutaneous coronary intervention. Chin J Integr Med 2014;20:88-93.
2. He QY, Wang J, Zhang YL, Tang YL, Chu FY, Xiong XJ, et al. Effect of Yiqi Yangyin Decoction on the quality of life of patients with unstable angina pectoris. Chin J Integr Med 2010;16:13-18.
3. Shang Q, Wang H, Li S, Xu H. The effect of sodium tanshinone ⅡA sulfate and simvastatin on elevated serum levels of inflammatory markers in patients with coronary heart disease: a study protocol for a randomized controlled trial. Evid Based Complement Alternat Med 2013;2013:756519.
4. Shang H, Zhang J, Yao C, Liu B, Gao X, Ren M, et al. Qi-shen-yi-qi dripping pills for the secondary prevention of myocardial infarction: a randomised clinical trial. Evid Based Complement Alternat Med 2013;2013:738391.
5. Wang SL, Wang CL, Wang PL, Xu H, Liu HY, Du JP, et al. Combination of Chinese herbal medicines and conventional treatment *versus* conventional treatment alone in patients with acute coronary syndrome after percutaneous coronary intervention (5C trial): an open-label randomized controlled, multicenter study. Evid Based Complement Alternat Med 2013;2013:741518.
6. Chen KJ, Shi DZ, Xu H, Lu SZ, Li TC, Ke YN, et al. XS0601 reduces the incidence of restenosis: a prospective study of 335 patients undergoing percutaneous coronary intervention in China. Chin Med J 2006;119:6-13.
7. Lu XY, Shi DZ, Xu H. Clinical study on effect of Xiongshao Capsule on restenosis after percutaneous coronary intervention. Chin J Integr Tradit Chin West Med (Chin) 2006;26:13-17.
8. Shang Q, Xu H, Liu Z, Chen K, Liu J. Oral *Panax notoginseng* preparation for coronary heart disease: a systematic review of randomized controlled trials. Evid Based Complement Alternat Med 2013;2013:940125.

9. Luo J, Xu H, Chen K. Systematic review of Compound Danshen Dropping Pill: a chinese patent medicine for acute myocardial infarction. Evid Based Complement Alternat Med 2013;2013:808076.
10. Zheng GH, Liu JP, Chu JF, Mei L, Chen HY. Xiongshao for restenosis after percutaneous coronary intervention in patients with coronary heart disease. Cochrane Database Syst Rev 2013;5:CD009581.
11. Gao ZY, Qiu Y, Jiao Y, Shang QH, Xu H, Shi DZ. Analysis on outcome of 3537 patients with coronary artery disease: integrative medicine for cardiovascular events. Evid Based Complement Alternat Med 2013;2013:162501.
12. Tian F, Xie YM. Real-world study: a potential new approach to effectiveness evaluation of traditional Chinese medicine interventions. J Chin Integr Med (Chin) 2010;8:301-306.
13. Chinese Society of Cardiology, Editorial Board of Chinese Journal of Cardiology. Guideline for diagnosis and treatment of patients with chronic stable angina. Chin J Cardiol (Chin) 2007;35:195-206.
14. Chinese Society of Cardiology, Editorial Board of Chinese Journal of Cardiology. Guideline for diagnosis and treatment of patients with unstable angina and non-ST-segment elevation myocardial infarction. Chin J Cardiol (Chin) 2007;35295-35304.
15. Antman EM, Hand M, Armstrong PW, Bates ER, Green LA, Halasyamani LK, et al. 2007 focused update of the ACC/AHA 2004 guidelines for the management of patients with ST-elevation myocardial infarction: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2008;51:210-247.
16. Chinese Society of Cardiology, Editorial Board of Chinese Journal of Cardiology. Guideline for diagnosis and treatment of acute heart failure. Chin J Cardiol (Chin) 2010;38:195-208.
17. Hunt SA. ACC/AHA 2005 guideline update for the diagnosis and management of chronic heart failure in the adult: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Update the 2001 Guidelines for the Evaluation and Management of Heart Failure). J Am Coll Cardiol 2005;46:e1-e82.
18. Mancia G, De Backer G, Dominiczak A, Cifkova R, Fagard R, Germano G, et al. Guidelines for the management of arterial hypertension: the task force for the management of arterial hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). Eur Heart J 2007;28:1462-1536.
19. Joint Committee for the Prevention and Treatment of Dyslipidemia in Chinese Adults. Chinese guidelines on prevention and treatment of dyslipidemia in adults. Chin J Cardiol (Chin) 2007;35:390-419.
20. Boden WE, O'Rourke RA, Teo KK, Hartigan PM, Maron DJ, Kostuk WJ, et al. Optimal medical therapy with or without PCI for stable coronary disease. N Engl J Med 2007;356:1503-1516.
21. Stone GW, Maehara A, Lansky AJ, de Bruyne B, Cristea E, Mintz GS, et al. A prospective natural-history study of coronary atherosclerosis. N Engl J Med 2011;364:226-235.
22. Majed B, Arveiler D, Bingham A, Ferrieres J, Ruidavets JB, Montaye M, et al. Depressive symptoms, a time-dependent risk factor for coronary heart disease and stroke in middle-aged men: the PRIME Study. Stroke 2012;43:1761-1767.
23. Park JH, Tahk SJ, Bae SH. Depression and anxiety as predictors of recurrent cardiac events 12 months after percutaneous coronary interventions. J Cardiovasc Nurs 2014;30:351-359.
24. Cheng JM, Oemrawsingh RM, Garcia-Garcia HM, Akkerhuis KM, Kardys I, de Boer SP, et al. Relation of C-reactive protein to coronary plaque characteristics on grayscale, radiofrequency intravascular ultrasound, and cardiovascular outcome in patients with acute coronary syndrome or stable angina pectoris (from the ATHEROREMO-IVUS study). Am J Cardiol 2014;114:1497-1503.

(Accepted September 16, 2015; First Online April 28, 2016)
Edited by YUAN Lin