In Chinese medicine (CM), the disease is treated based on the CM syndrome by analyzing all clinical manifestations. The patients suffered from one disease with the same CM syndrome could be treated with two similar herbal formulae. It has been reported that CM syndrome could be useful for specifying the indication for a treatment. On the other hand, some biomedical parameters might be helpful to make further clarification of the indication for two similar herbal formulae though they were used for the patients with the same disease and CM syndrome. In this study, the biomedical parameters were used to explore their possible relations with the effectiveness of two herbal formulae targeting on the same CM syndrome in the treatment of angina pectoris from a clinical trial data.

Coronary heart disease (CHD) is the leading cause threatening human health. Cardiovascular diseases (CVD) cause one third of all deaths in China, and the number is anticipated to double by 2020. Angina pectoris refers to symptoms that indicate inadequate perfusion of the heart (ischemia), and it is characterized by discomfort in the chest, shoulder, back, arm or jaw. The treatment for patients with angina pectoris are mainly focusing on the relief of symptoms, slowing the progression, and the reduction of myocardial infarction and death. In China, more herbal medicines were developed for the treatment of angina pectoris. Tongxinluo Capsule (通心络胶囊) and Kangxin Capsule (康欣胶囊) had been marketed in China and commonly used for the treatment of CHD with good clinical effects.

ABSTRACT Objective: To explore the effectiveness related indicators which might help identify the indications of Tongxinluo Capsule (通心络胶囊) and Kangxin Capsule (康欣胶囊) targeting on qi deficiency and blood stasis pattern in Chinese medicine (CM) in the treatment of angina pectoris. Methods: The data from a multicenter, randomized and double-blinded study conducted at 5 centers in China were obtained for the analysis. A total of 239 patients with angina pectoris and CM syndrome of qi deficiency and blood stasis were randomly assigned in a 1:1 ratio to Tongxinluo Capsule group (119 cases) and Kangxin Capsule group (120 cases). Angina effectiveness and electrocardiogram (ECG) improvement were selected as the therapeutic outcomes. Results: After a 4-week treatment, the effective rates of Tongxinluo Capsule and Kangxin Capsule were 43.70% and 25.00%, respectively (P<0.05). Serum low-density lipoprotein (LDL) level was found to influence the effectiveness of Tongxinluo Capsule which had higher effective rate in the patients with lower level of LDL. Heart rate was found to influence the effectiveness in the patients treated with Kangxin Capsule which had higher effective rate in the patients with heart rate <80 beats/min. Conclusion: LDL level and heart rate were the indicators which help identify the indications of Tongxinluo Capsule and Kangxin Capsule, respectively, in the treatment of angina pectoris with CM syndrome of qi deficiency and blood stasis.

KEYWORDS angina pectoris, qi deficiency and blood stasis syndrome, Chinese medicine, low-density lipoprotein, heart rate
and Kangxin Capsule which target on the same CM syndrome were used for the treatment of angina pectoris in a randomized clinical trial, and the data were taken to explore the clinical effectiveness related indicators.

**METHODS**

**Inclusion Criteria**

Eligible patients were male and female outpatients aged from 40 to 70 years, with at least twice angina attacks a week, a history of chronic angina pectoris for ≥2 months before study entry, and the evidence of coronary artery disease documented by one or more of the following criteria: myocardial infarction ≥3 months; percutaneous coronary angioplasty ≥6 months or coronary artery bypass surgery ≥3 months; coronary angiography showing ≥50% diameter stenosis of one or more major coronary arteries; positive scintigraphic test showing exercise-induced reversible myocardial ischaemia; or a positive stress echocardiography showing regional wall motion abnormality and failure of normal rise in left ventricular ejection fraction with exercise. At the same time, the patients should meet CM syndromes of qi deficiency and blood stasis, and the patients must show pain and full sensation in chest, palpitation, fatigue and short breath.

**Exclusion Criteria**

Exclusion criteria included: significant heart disease other than coronary artery disease; severe heart failure symptoms (New York Heart Association class III or IV); symptomatic hypertension or uncontrolled hypertension (resting systolic blood pressure over 180 mm Hg or diastolic blood pressure over 120 mm Hg); chronic or paroxysmal atrial fibrillation present at the pre-selection visit; atrial flutter; known severe renal failure, liver function test abnormality, or known electrolyte disorder; anaemia (blood haemoglobin, 110 g/L or 6.8 mmol/L); female at pregnancy or lactation; allergy constitution or allergy to these two drugs; participation in other clinical trials.

**Study Design**

A multicenter, randomized and double-blinded study was conducted at 5 centers in China, including the First Affiliated Hospital of Henan University of Traditional Chinese Medicine, the First Teaching Hospital of Tianjin University of Traditional Chinese Medicine, the First Affiliated Hospital of Shandong University of Traditional Chinese Medicine, Shuguang Hospital of Shanghai University of Traditional Chinese Medicine, and Longhua Hospital of Shanghai University of Traditional Chinese Medicine. The study was approved by the Ethical Committee of the First Affiliated Hospital of Henan University of Traditional Chinese Medicine, and all the institutional review boards of the 5 participating centers approved the protocol. The study was conducted according to the guidelines of the Declaration of Helsinki and the principles of good clinical practice (GCP, China). From December 2003 to November 2004, 239 patients were included and randomly assigned in a 1:1 ratio to Tongxinluo Capsule group (119 cases) and Kangxin Capsule group (120 cases). The stratified random numbers produced by SAS software were used for the randomization. Written informed consents were obtained from all participants. Baseline characters were comparable between the two groups (Table 1).

**Table 1. Baseline Characteristics of the Subjects between Groups**

<table>
<thead>
<tr>
<th>Item</th>
<th>Tongxinluo Group (119 cases)</th>
<th>Kangxin Group (120 cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (Male/Female)</td>
<td>38/81</td>
<td>47/73</td>
</tr>
<tr>
<td>Age (Year, $\bar{x}$ ± s)</td>
<td>57.49 ± 7.68</td>
<td>58.17 ± 7.80</td>
</tr>
<tr>
<td>Disease course (Months, $\bar{x}$ ± s)</td>
<td>29.69 ± 34.83</td>
<td>39.48 ± 58.08</td>
</tr>
<tr>
<td>Complication [Case (%)]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>46 (38.66)</td>
<td>58 (48.33)</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>43 (36.13)</td>
<td>34 (28.33)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>14 (11.76)</td>
<td>11 (8.17)</td>
</tr>
<tr>
<td>Nitroglycerin administration [Case (%)]</td>
<td>31 (34.07)</td>
<td>35 (38.46)</td>
</tr>
</tbody>
</table>

**Therapy Application**

All patients were administrated orally 4 capsules each time, 3 times a day after meal for 4 weeks. The subjects who used nitroglycerin as a routine therapy were allowed to continue using it based on their own feelings, and the dosage changes should be recorded for analysis.

**Effectiveness Evaluation**

Angina effectiveness and improvement in electrocardiogram (ECG) were used as measured