

## CLINICAL STUDY

## Distribution of elements extracted from symptom patterns and characteristics of polysomnograph of common symptom patterns of insomnia with Traditional Chinese Medicine

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ments were the brain and heart, and the main characteristics of the disease symptom elements were phlegm-heat, *Yin*-deficiency and *Qi*-stagnation. The elements from two or three symptom patterns were commonly manifested in patients with insomnia, especially from three symptom patterns. We also found that all TCM symptom patterns had an effect on polysomnographic indicators in PSG tests.

**CONCLUSION:** The elements of symptom patterns in insomnia were identified as mainly fire-heat and phlegm-heat. The most common patterns of excess were pathogenic fire derived from stagnation of liver-*Qi*, and mental disturbance due to phlegm-heat, while the most common patterns of deficiency in both the heart and the spleen. There are many differences in PSG indicators of different syndrome patterns of insomnia.

### Abstract

**OBJECTIVE:** To analyze the distribution and combined regulation of elements of symptom patterns in the diagnosis of insomnia with Traditional Chinese Medicine (TCM).

**METHODS:** The samples were collected from the patients, diagnosed with insomnia, of Henan Province Hospital of TCM between June 2011 and September 2013. The symptom patterns in insomnia were extracted. Next, symptom differentiation, characteristics of polysomnography (PSG), distribution and combined regulation of these symptom patterns were conducted by tests.

**RESULTS:** In total, 286 eligible patients were recruited. The main locations of the disease symptom ele-

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**Key words:** Sleep initiation and maintenance disorders; Symptom elements; Polysomnogram; Polysomnography

### INTRODUCTION

Insomnia is a common sleep disorder. Chronic insomnia can lead to a deficit in the attention, judgment, memory and daily work capacity of individuals,<sup>1</sup> can reduce quality of life, and can seriously affect the social functioning and mental activities of daily living. Traditional Chinese Medicine (TCM) offers some advantages to the treatment of insomnia. But the clinical judgment of TCM symptom patterns in insomnia is currently based on four diagnostic criteria: insight, auscul-

tation and olfaction, inquiry, and pulse-taking and palpation. The treatment lacks objective and uniform diagnostic criteria; instead, it is based on a rather subjective approach. The symptom pattern differentiation method that has been proposed in recent years makes the diagnosis of TCM symptoms more standardized and meticulous. In particular, the clinical application of polysomnography (PSG) provides an objective basis for diagnosing insomnia. To our knowledge, no studies on TCM treatment for insomnia have yet focused on specific elements differentiation from TCM symptom patterns combined with PSG data. This study aimed to analyze the distribution of elements of symptom patterns in patients with insomnia.

## MATERIALS AND METHODS

### *Participants*

The subjects were the outpatients and inpatients of Henan Province Hospital of TCM, recruited between June 2011 and September 2013. The study followed the ethics standards set by the hospital ethics committee in Henan province, and informed consent was obtained.

### *Diagnostic criteria*

We applied western-type diagnostic criteria in accordance with the diagnostic criteria for insomnia described in the Chinese Classification of Mental Disorders Version 3 (CCMD-3).<sup>2</sup>

We applied the following TCM diagnostic criteria in accordance with the criteria established by Zhou<sup>3</sup> and by the State Administration of Traditional Chinese Medicine:<sup>4</sup> (a) subjects who found it difficult to go to sleep or to remain asleep (a condition that lasted for more than 3 weeks) or who stayed awake almost all night; and (b) subjects in whom the condition was often accompanied by headache, dizziness, heart palpitations, forgetfulness and fatigue.

### *Inclusion criteria*

The inclusion criteria were as follows: (a) the disease matched the Chinese- and western-style diagnostic criteria; and (b) the subjects were aged 18-75 years.

### *Exclusion criteria*

The exclusion criteria were patients with severe heart disease, lung disease or gastrointestinal disease, or with abnormal thyroid function.

### *Research methods*

(a) Survey tools: based on the results of earlier research, the study used the "Information Collection Table of Insomnia in TCM Clinic" unified and formulated by the research group. The main contents were demographics and information collected from four TCM diagnostic techniques. The identification of symptom patterns was conducted by a TCM associate chief physician or a chief physician. PSG testing was conducted using Alice 5 Polysomnography of Weikang Company of Philips (Allegheny County, Pittsburgh, PA, USA). The polysomnographic indicators included EEG, EOG, jaw EMG, oxygen saturation, leg EMG, ECG, chest and abdominal movement, nose and mouth flow; all tests were performed in a quiet, comfortable sleep monitoring room, and lasted 7 h.

(b) Extraction of TCM symptom patterns: based on Zheng<sup>5</sup> and Zhou,<sup>3</sup> we conducted TCM differentiation of insomnia. According with pre-study and extraction principle,<sup>6,9</sup> unified syndrome were divided into symptom elements of diseases location and symptom elements of diseases character.

(c) Statistical analysis: data analysis was conducted using SPSS17.0 analysis of variance; *Chi-square*, and rank sum tests were performed to reveal the differences between groups. Statistical significance was set at  $P \leq 0.05$ .

## RESULTS

### *Extraction of elements from symptom patterns*

Combined with the characteristics of the clinical pathogenesis of insomnia, the elements of symptom patterns were extracted in terms of the location of seven diseases and the characteristics of six diseases (Table 1).

### *Combined regulation of the elements extracted from symptom patterns*

According to our clinical research, we found that a variety of symptom-pattern elements in insomnia occur at the same time. Most common of these was a combina-

Table 1 Distribution of elements of symptom patterns in insomnia

| Characteristic         | Frequency (times) | Frequency (%) | Location    | Frequency (times) | Frequency (%) |
|------------------------|-------------------|---------------|-------------|-------------------|---------------|
| Fire-heat              | 123               | 43.0          | Brain       | 248               | 86.7          |
| Phlegm-heat            | 93                | 32.5          | Heart       | 230               | 80.4          |
| <i>Yin</i> -deficiency | 56                | 30.1          | Liver       | 67                | 23.4          |
| <i>Qi</i> -stagnation  | 67                | 23.4          | Kidney      | 56                | 30.1          |
| <i>Qi</i> -deficiency  | 66                | 23.1          | Spleen      | 52                | 18.2          |
| Blood-deficiency       | 52                | 18.2          | Gallbladder | 14                | 4.9           |
| -                      | -                 | -             | Stomach     | 9                 | 3.2           |

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