

Somatic symptoms and their association with anxiety and depression in Chinese patients with cardiac neurosis

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Abstract

Objective: We sought to investigate somatic symptoms detected by the Somatic Self-rating Scale and to evaluate whether they were associated with the psychological symptoms of anxiety and depression in patients with cardiac neurosis.

Methods: A total of 180 patients with cardiac neurosis at the Third Xiangya Hospital, Changsha, China, were surveyed from January 2017 to July 2018. Participants completed a general information questionnaire, the Somatic Self-rating Scale, the Patient Health Questionnaire-9 and the Generalized Anxiety Disorder Scale-7.

Results: The mean (\pm standard deviation) somatic symptom score in patients with cardiac neurosis was 40.83 ± 7.12 . The most severe symptoms were cardiovascular symptoms, fatigue and muscle soreness. A total of 90 patients (46.4%) had anxiety and 80 (50.0%) had depression. Multiple stepwise regression analysis showed that somatic symptoms in patients with cardiac neurosis were associated with both anxiety and depression.

Conclusion: Somatic symptoms in patients with cardiac neurosis were associated with both anxiety and depression. Therefore, it is important to provide effective emotional interventions to promote patient rehabilitation.

Keywords

Cardiac neurosis, somatic symptoms, anxiety, depression, cardiovascular, fatigue, muscle soreness, China

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Introduction

Somatic symptoms are not a specific disease, but a manifestation of a pathological process.¹ Somatic symptoms are physical symptoms that cause discomfort but cannot be reasonably explained by conventional medicine in terms of physiological disease processes.² At the end of the 17th century, psychological factors began to be considered a cause of somatic symptoms. Somatic symptoms are mainly associated with emotional and brain functions, and may reflect potential emotional conflicts that patients cannot face.³ Somatic symptoms such as chest pain, dizziness, fatigue and abdominal discomfort are prevalent in patients with anxiety and depression.⁴ Approximately 30% of patients with depression or anxiety experience simultaneous somatic symptoms.⁵ One study of the relationship between anxiety, depression and somatic symptoms found that the presence of somatic symptoms is associated with at least a twofold increase in anxiety or depression.⁶

Somatic symptoms associated with the circulatory system are known as cardiac neurosis.⁴ Cardiac neurosis is a clinical syndrome characterized by autonomic dysfunction and associated with cardiovascular function disorders.⁶ It is mainly caused by intense emotional stimulation or a constant state of tension that cannot be physiologically regulated.⁶ The incidence of mental disorders without physical illness in cardiac patients is approximately one-third, and these disorders are mostly cardiac neuroses.⁷ Cardiac neurosis is characterized by several cardiovascular and systemic symptoms, such as palpitations, dyspnoea, precordial pain and fatigue, but often a comprehensive physical examination shows no evidence of organic lesions.^{8,9} The course of the disease is mostly repeated and protracted; emotional stimuli before illness

onset are often related to family, social and psychological factors.^{10–12}

In recent years, the incidence of cardiac neurosis has gradually increased, seriously affecting people's quality of life and work.¹³ Therefore, this study investigated the status of somatic symptoms and mental health problems in patients with cardiac neurosis, and explored the correlation between symptoms and mental health. The aim was to provide a basis for health workers to conduct more effective psychological interventions to stabilize patient mood and promote rehabilitation.

Methods

Study sample

From January 2017 to July 2018, patients with cardiac neurosis were recruited from three general hospitals in Changsha, Hunan, China. Participants were eligible if they met the diagnostic criteria for cardiac neurosis in the 15th edition of Practical Internal Medicine,⁸ had no language communication disorder and volunteered to participate in this study. Exclusion criteria were presence of cerebrovascular accidents and malignant tumours, and a history of mental illness or severe cognitive impairment. This study was approved by the ethics committee of the Third Xiangya Hospital of Central South University (2018-S284).

Procedure

The researchers introduced themselves and explained the study purpose and significance to participants. They also obtained participant consent and explained the purpose, content and requirements of the survey. After obtaining participants' informed consent, questionnaires were issued. Respondents filled in the questionnaires anonymously and questionnaires

were collected on the spot. A total of 180 questionnaires were issued and 170 were returned (response rate: 94.44%). Two questionnaires were excluded owing to incomplete information, leaving 168 valid questionnaires (effective response rate: 93.33%).

Questionnaires

Demographic information questionnaire. The questionnaire was designed according to the purpose of the study and assessed gender, age, education, employment status and disease course.

Somatic Self-rating Scale (SSS). The SSS¹⁴ was developed by Mao Jialiang and is used to help physicians quickly identify anxiety and depression and judge the efficacy of treatment. The scale has 20 items rated on a 4-point Likert-type scale (1 = asymptomatic, 2 = mild, 3 = moderate, 4 = severe). Higher scores are associated with more severe somatic symptoms. The total possible SSS score is 80 and is divided into the following levels, which indicate increasing severity: 0 to 29, 30 to 39, 40 to 59 and 60 or greater. Cronbach's α coefficient for the SSS is 0.89, and the scale has good reliability and validity.¹⁴

The Patient Health Questionnaire depression module (PHQ-9). The PHQ-9 is a depression module of the PHQ scale. It is used to screen for depression and assess symptom severity.¹⁵ The scale consists of nine items rated on a 4-point Likert-type scale (0 = none at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). The total possible PHQ-9 score ranges from 0 to 27. Cutoff points of 5, 10, 15 and 20 represent, respectively, mild, moderate, moderately severe and severe levels of depression on the PHQ-9.¹⁶ The sensitivity and specificity of the PHQ-9 are more than

90%, and it is considered to show good validity, reliability and feasibility.¹⁷

Generalized Anxiety Disorder scale (GAD-7). The GAD-7 scale is used to screen for generalized anxiety and assess symptom severity.¹⁸ It contains seven items rated on a 4-point Likert-type scale (0 = none at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). The total possible score ranges from 0 to 21 and is divided into four levels of increasing severity: 0 to 4, 5 to 9, 10 to 14 and 15 to 21. The sensitivity and specificity of the GAD-7 are both above 90%.^{19,20}

Statistical analysis

The Statistical Package for the Social Sciences (SPSS 18; SPSS Inc., Chicago, IL, USA) was used to establish a database and analyse the data. Scale scores were described using means and standard deviations, and categorical data were described using frequencies and percentages. The statistical analyses comprised t-tests, analysis of variance and multiple regression analysis. A two-sided P value of <0.05 was considered to indicate statistical significance.

Results

Sample characteristics

A total of 180 patients with cardiac neurosis who met the study inclusion criteria were selected. Because 12 patients did not complete the questionnaire, 168 cases were investigated: 108 males (64.29%) and 60 females (35.71%). Their ages ranged from 21 to 82 years, with a mean age of 61.66 years (standard deviation, 12.27 years). A total of 78 patients (46.4%) had anxiety and 84 (50.0%) had a depression score >10 . Patient demographic data are shown in Table 1.

Table 1. Univariate analysis of somatic symptoms (N = 168).

Variable	No of Participants (N = 168)	Percentage (%)	Total score of somatic symptoms (mean \pm standard deviation)	F/t	P
Gender					
male	108	64.29	39.94 \pm 6.20	-2.195	0.030
female	60	35.71	42.43 \pm 8.36		
Age (years)					
<65	93	55.36	39.40 \pm 5.61	-2.976	0.003
\geq 65	75	44.64	42.61 \pm 8.34		
Education					
illiterate	30	17.86	42.67 \pm 8.08	3.061	0.030
primary	69	41.07	41.64 \pm 6.95		
secondary	45	26.79	40.22 \pm 7.39		
college and above	24	14.29	37.38 \pm 4.39		
Employment					
working	66	39.29	39.67 \pm 5.39	3.218	0.043
retired	78	46.23	40.87 \pm 7.16		
unemployed	24	14.29	43.92 \pm 10.05		
Depression					
mild	84	50.0	37.42 \pm 4.05	25.401	0.000
moderate	63	37.50	42.81 \pm 7.18		
moderately severe	15	8.93	46.60 \pm 8.63		
severe	6	3.57	53.50 \pm 6.02		
Anxiety					
none	90	53.56	36.64 \pm 3.55	48.034	0.000
mild	63	37.50	45.00 \pm 5.98		
moderate	12	7.14	45.83 \pm 10.29		
severe	3	1.79	59.00 \pm 0.000		

Somatic symptoms

The somatic symptoms of 168 patients with cardiac neurosis were assessed using the SSS. The results showed that the average SSS score in patients with cardiac neurosis was 40.83 ± 7.12 . The most severe symptoms were cardiovascular, followed by fatigue and muscle soreness (Table 2). All patients with cardiac neurosis reported somatic symptoms of differing severity: 50.0% were mild cases, 48.2% were moderate cases and 1.8% were severe cases.

Determinants of somatic symptoms

Table 1 shows the results of univariate analysis. Six factors were significantly

associated with somatic symptoms, with higher scores observed for patients who were female ($P=0.030$), older ($P=0.003$), had lower education levels ($P=0.030$), were unemployed ($P=0.043$) and had severe depression and anxiety ($P<0.05$).

Table 3 shows the results from the multiple regression analysis. Four factors showed an independent association with somatic symptoms, with somatic symptom scores increasing with age ($P=0.008$) and depression ($P<0.001$) and anxiety ($P<0.001$) levels, but decreasing with education.

Discussion

Cardiac neurosis is a somatization disorder classed as a psychological disorder and

Table 2. Somatic symptoms for Chinese patients with cardiac neurosis (n = 168).

Items	Mean	SD
1. Dizziness and headache	2.16	0.46
2. Sleep disorders (difficulty falling asleep, dreaming, easy to wake, early awakening, insomnia)	2.25	0.47
3. Fatigue	2.91	0.69
4. Bad mood and decreased interest	2.50	0.68
5. Cardiovascular symptoms (palpitations, chest tightness, chest pain, shortness of breath)	3.14	0.69
6. Easily nervous or worried	2.52	0.71
7. Easily generates negative thoughts and overthinking	1.68	0.75
8. Memory loss and aprosexia	1.75	0.74
9. Gastrointestinal symptoms (abdominal distension, abdominal pain, loss of appetite, constipation, diarrhoea, dry mouth, nausea)	2.61	0.73
10. Muscle soreness (neck, shoulder, waist, back)	2.66	0.58
11. Cries easily	1.25	0.51
12. Numbness, tingling, convulsions in the hands, feet or body	1.61	0.84
13. Blurred vision	1.64	0.75
14. Easily irritated and allergic to sound	2.32	0.51
15. Compulsion (forced thinking, compulsive behaviour)	1.26	0.56
16. Limbs are prone to sweating or chilling	1.34	0.58
17. Usually worries about getting sick	1.80	0.86
18. Dyspnoea and constant sighing	1.61	0.70
19. Pharyngeal discomfort and throat obstruction	2.38	0.49
20. Frequent and urgent urination	1.45	0.76
Total	40.83	7.12

SD: standard deviation.

Table 3. Results of multiple stepwise regression analysis of determinants of somatic symptoms for Chinese patients with cardiac neurosis (N = 168).

Effect	B	Standard error	Beta	t	P
Constant	15.449	2.537		6.090	<0.001
Depression	6.341	0.997	0.396	6.361	<0.001
Anxiety	5.607	1.000	0.350	5.605	<0.001
Age	2.701	0.999	0.158	2.704	0.008
Education	-1.031	0.529	-0.113	-1.948	0.053

R = 0.682; R² = 0.465; F = 35.434; P < 0.001.

often accompanied by various prominent cardiovascular somatic symptoms. Because of the lack of laboratory-assisted diagnostics for this disease, few cardiologists can identify cardiac neurosis.^{21,22} As patients with cardiac neurosis have repeated symptoms, they typically have double the

number of hospital visits and consumption of medical resources than patients with more common diseases,²³ and an increased incidence of long-term coronary heart disease.²⁴ Our study showed that the incidence of mild somatic symptoms in patients with cardiac neurosis was 50.0%, the incidence

of moderate somatic symptoms was 48.2% and the incidence of severe somatic symptoms was 1.8%. Analysis of SSS scores identified cardiovascular symptoms, fatigue and muscle pain as the most severe somatic symptoms. Patients also reported mood disorders; we found an incidence of depression of 50.0%, mainly mild depression (37.5%), and an incidence of anxiety of 46.4%. This demonstrated that patients with cardiac neurosis not only experience somatic symptoms, but also have poor mental health, consistent with research both in China and other countries.^{25,26} In addition, we found that somatic symptoms had a high comorbidity rate with depression and anxiety symptoms.²⁷⁻³⁰

The results of the univariate analysis showed that gender, age, education and employment status were associated with SSS scores. The SSS scores of female patients were higher than those of male patients, and the SSS scores of older patients were higher than those of younger patients. The difference was statistically significant ($P < 0.05$), which is consistent with Yan's findings.^{26,31} Female patients, particularly middle-aged women, are more likely to have somatic symptoms owing to changes in social status and hormones.³² The gradual age-related changes in bodily functions in older people are characterized by degradation in visceral and neurological functions and a decline in the ability to adapt to both the internal environment and external stimuli. In addition, older people often lack companionship and a solid economic foundation, resulting in substantially greater somatic symptoms in older people compared with younger people.³³

Education levels also affected somatic symptoms. Lower educational levels were associated with more severe somatic symptoms. This may be related to cognitive assessment and the ability to access information about cardiac neurosis in patients of

different educational levels. Patients with higher education levels are more likely to acquire knowledge from various sources about the prevention of, and prognosis for, cardiac neurosis, and to have fewer concerns about disease prognosis. They are also more likely to use a range of social resources to cope with the occurrence and development of the disease. Therefore, nurses should strengthen information sharing and support for patients with low educational levels, and advise them on how to access disease information and how to use social media to manage the disease. We also found that employment status was a contributing factor to somatic symptoms. The degree of somatic symptoms was mild in those with jobs and most severe in unemployed participants. A possible explanation is the lack of universal recognition of unemployed people owing to their lack of a stable income.

Psychoanalytic theory holds that symptoms are a bridge between the patient's body and mind. Unconsciously turning desires and conflicts into somatic symptoms can help to alleviate emotional pain. It can also attract the attention and sympathy of others, and lead to greater care from relatives.³⁴ Somatic symptoms are prominent in patients with anxiety and depression. The results of this study identified differences in somatic symptoms among patients with different levels of anxiety and depression. SSS scores were positively correlated with anxiety and depression. Greater degrees of anxiety and depression were associated with more severe somatic symptoms.³⁵⁻³⁷ This indicates that the somatic symptoms of patients with anxiety and depression could effectively be reduced if their emotional symptoms are treated. This could help to relieve patients of their psychological burden, further alleviating their anxiety and depression. Therefore, cardiology medical staff should be fully aware of the somatic symptoms of anxiety and

depression. They should focus on identifying somatic symptoms, emphasize the process by which patients experience psychological changes throughout life and develop tailored psychological interventions to address psychological changes. In addition, patients should be encouraged to properly vent any negative emotions, to improve their mental health, alleviate somatic symptoms and optimize clinical treatment.

A study limitation is the small sample size. The results may have been affected by differences among regional and hospital levels. Therefore, future studies are needed to explore the experience of patients from different regions and hospitals.

Conclusion

Patients with cardiac neurosis usually show somatic symptoms. The severity of somatic symptoms is affected by age, education, anxiety and depression. Therefore, it is necessary to provide psychotherapy and psychological care along with routine cardiovascular treatment and care. In addition, medical staff should focus on older patients and patients with low educational levels. It is necessary to develop targeted psychotherapy interventions, mobilize social support available to patients and encourage patients to overcome their negative moods. This could help to stabilize their condition and promote cardiac rehabilitation.

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Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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