# Analysis of the Relationship Between Depression and Hypertension in Elderly Patients with Coronary Heart Disease

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**Abstract:** Objective: To observe and analyze the relationship between coronary heart disease, hypertension and depression in elderly patients with hypertension and coronary heart disease. Methods: The elderly patients with hypertension and coronary heart disease over 60 years old who were admitted to a hospital from February 2017 to November 2018 were selected as the research objects, and the clinical data were collected. The effects of coronary heart disease and hypertension on depression and anxiety of elderly patients and their relationship were discussed and analyzed. Among them, 92 patients aged 60-85, 71 patients with coronary heart disease, 73 patients with hypertension, and 4 patients with simple arrhythmia. Self-rating Depression Scale (SDS) and Self-rating Anxiety Scale (SAS) were used to test the degree of depression in elderly patients. Results: 21 cases (22.8%) were found to be depressed, 18 cases (19.6%) were anxious and 12 cases were depressed with anxiety. At the same time, 57 patients with hypertension and coronary heart disease (observation group) had significantly higher SAS score than 35 patients with single coronary heart disease or hypertension or arrhythmia (control group), $P < 0.01$; but there was no significant difference in the number of depression, anxiety and SDS score. SAS items comparison found that the observation group had significantly higher scores in 8 items of unfortunate foreboding, hand and foot tremor, fatigue, dyspnea, hand and foot tingling, frequency of urine, facial flushing and nightmare than the control group, all $P < 0.05$. The anxiety score of women in the observation group was significantly higher than that of men. Conclusion: Elderly patients with coronary heart disease and hypertension are more anxious than elderly patients with single cardiovascular disease. Meanwhile, the incidence of depression and anxiety in women is higher than that in men. Clinical attention should be paid to it and corresponding countermeasures should be given for treatment.

**Keywords:** Hypertension; Coronary heart disease; Depression; Elderly patients

## 1. Introduction

At present, China has entered an aging society, and the health of the elderly has become a social focus. Due to the physiological degradation of organs and systems in the elderly, it is easy to cause physical discomfort or pain [1]. Cardiovascular disease is one of the common clinical diseases. It occurs mostly in the elderly, especially in the elderly. With the improvement of people's living standards and the development of life rhythm, the incidence of cardiovascular disease is increasing year by year. Coronary heart disease (CHD) is the most common cardiovascular disease in the elderly. Hypertension is a common clinical disease and frequently-occurring disease. Because patients suffer from conservative pain for a long time, coupled with changes in the environment after admission and other factors, complex psychological stress reactions occur, in which anxiety and depression are the most common [2]. Clinical studies suggest that depression and anxiety are closely related to the occurrence of cardiovascular disease[3].

## 2. Research Objects and Methods

### 2.1. Research object

From February 2017 to November 2018, elderly patients over 60 years old were admitted to a hospital for one week due to cardiovascular diseases. Removal of dementia, language and severe cognitive impairment, and refusal of investigators. A total of 92 patients, 72 males and 20 females, aged 61-85 years, with an average age of 74.8 + 6.4 years, were enrolled. Among them, there were 14 cases aged 60-69, 37 cases aged 70-79, 41 cases aged over 80, 71 cases of coronary heart disease, 73 cases of hypertension and 4 cases of simple arrhythmia. There were 19 cases of heart failure, 33 cases of arrhythmia, 26 cases of chronic cardiac insufficiency and 41 cases of diabetes mellitus.

### 2.2. Method

Self-rating depression scale (SDS) and self-rating anxiety scale (SAS) were used by trained doctors or responsible

nurses to investigate the suitability of demonstrating the investigation to patients beforehand and obtaining patients'consent and active cooperation. Use normative instructions, the patient fills in or helps to read and fill in the questions by himself, so as to avoid inducing language.

Each item in the scale was divided into four grades according to the frequency of symptoms. The crude score was converted into standard score and evaluated according to the domestic norm: SDS standard score 53-62 was mild depression, 63-72 was moderate depression, > 72 was severe depression, SAS standard score 50-59 was mild anxiety, 60-69 was moderate anxiety, and > 69 was severe anxiety. 57 patients with coronary heart disease and hypertension were divided into observation group and 35 patients with coronary heart disease or hypertension or simple arrhythmia as control group. Depression, anxiety score, SDS and SAS items were compared.

### 2.3. Statistical Processing

SPSS 11.0 software was used for statistical analysis. The measurement data were expressed as mean ±standard deviation(x ±s), t test or variance analysis (multi-group comparison), and the counting data were analyzed by $\chi2$ test. The difference was statistically significant (P < 0.05).

## 3. Results

### 3.1. Detection of depression and anxiety

There were 21 cases of depression (mild 19 cases, moderate 2 cases). The SDS score was 58.2 ±4.3 vs 39.8 ±5.8, P < 0.01; There were 16 cases of anxiety (mild 13 cases, moderate 3 cases). The SAS score was 55.9 ±4.5, vs 38.5 ±6.0, P < 0.01, and 12 of them were depression and anxiety. There was no significant difference in age, sex, cardiovascular disease and course of disease between depression and non-depression, anxiety and non-anxiety. There was no significant difference in SDS,SAS standard score between the two groups.

### 3.2. Comparison of depression, anxiety and incidence between observation group and control group

### 3.2.1. Relationship between gender and depression and anxiety

There were 52 males and 40 females in this study. The scores of anxiety and depression were (40.2 ±6.7) and (45.7 ±8.8) in male and (49.7 ±8.5) and (47.1 ±9.3) in female. There was no significant difference in depression score between male and female patients (P > 0.05), and the anxiety score of female patients was significantly higher than that of male patients (P < 0.05).

### 3.2.2. Relationship between complications and depression and anxiety

The incidence of depression in observation group and control group was 28.1% (16 / 57) vs 14.3% (5 / 35), $\chi2$=2.773 ;22.8% (13 / 57) vs 8.6% (3 / 35), $\chi2$=3.461, P > 0.05. There was no significant difference in SDS score between the two groups (45.5 ±9.2 vs 42.1 ±9.8, P > 0.05), the SAS score in the observation group was significantly higher than that in the control group (44.2 ±8.1 vs37.8 ±8.6, P < 0.01), but the age in the observation group was larger than that in the control group 79. 0 ±6.1 vs 76.0 ±6.6 (P < 0.05). After 4 cases of simple arrhythmia were excluded in the control group, the age difference between the two groups disappeared significantly (79.0 ±6.1 vs 76.5 ±6.1, P > 0.05). The SAS score of the observation group was still significantly higher than that of the control group (44.2 ±8.1 vs 38.5 ±8.7, P < 0.01). In the observation group, the number of hypertensive patients was significantly higher than that in the control group (24.6% (14 / 57) vs 8.6% (3 / 35), 24.139%, P < 0.05%, 31.6%, respectively). Vs of 8 / 57 was 8.6% (3 / 35), $\chi2$ = 7.223 (P < 0.01). There was no significant difference between the two groups, 15.8% (9 / 57) vs 22.9% (8 / 35), $\chi2$ = 0.527 (P > 0.05). However, there was no significant difference in SDS,SAS score between sex, hypertension and heart failure groups. It is shown as table 1.

Table 1 Comparison of SDS,SAS scores by gender, Diabetes Mellitus and Heart failure（x ±s）

| Group | Number of examples | Age | SDS | SAS |
|---|---|---|---|---|
| Sex | | | | |
| Female | 40 | 77.6±6.8 | 46.9±11.3 | 45.1±10.1 |
| Male | 52 | 77.9±6.4 | 43.5±9.1 | 40.8±8.4 |
| t | | 0.181 | 1.307 | 1.816 |
| P | | 0.857 | 0.195 | 0.073 |
| Diabetes mellitus | | | | |
| Diabetes mellitus | 24 | 78.4±7.2 | 44.6±9.1 | 43.2±10.1 |
| Non diabetes mellitus | 68 | 77.7±6.2 | 44.0±9.7 | 41.2±8.5 |
| t | | 0.438 | 0.220 | 0.909 |
| P | | 0.662 | 0.825 | 0.366 |
| Heart failure | | | | |
| Heart failure | 20 | 79.4±4.0 | 46.1±9.4 | 42.4±8.8 |
| Non-heart failure | 72 | 77.5±6.8 | 43.7±9.6 | 41.5±8.9 |
| t | | 1.481 | 0.935 | 0.361 |

| P | | | 0.146 | | 0.353 | | 0.719 |

## 3.3. SAS score entry comparison

The scores of 8 items in the observation group were significantly higher than those in the control group (P < 0.05), but there was no significant difference in the scores of the other 12 items between the two groups (P > 0.05). It is shown as table 2.

**Table 2.  Comparison of SAS entry score between observation group and control group （x ±s）**

| Group | Number of examples | Unfortunate premonition | Hand and foot tremble | Feeble | Expiratory dyspnea | Tingling pain in the hands and feet | Ascheturesis | Flush | Nightmare |
|---|---|---|---|---|---|---|---|---|---|
| Observation group | 57 | 2.70±1.09 | 1.54±0.88 | 2.11±0.96 | 1.96±1.03 | 1.69±0.91 | 2.47±1.29 | 1.55±0.86 | 1.65±0.84 |
| Control group | 35 | 2.09±1.49 | 1.23±0.49 | 1.57±0.74 | 1.53±0.63 | 1.23±0.63 | 1.97±0.94 | 1.23±0.61 | 1.35±0.49 |
| t | | 2.510 | 2.112 | 2.857 | 2.340 | 2.413 | 2.230 | 1.996 | 2.140 |
| P | | 0.014 | 0.038 | 0.005 | 0.022 | 0.018 | 0.028 | 0.049 | 0.035 |

## 4. Discussion

Stress and anxiety are related to excitation and stress of sympathetic nervous system, and are one of the mechanisms of cardiovascular disease. Some scholars follow-up of 318 survivors after the first myocardial infarction for 3.4 years revealed that anxiety symptoms were associated with depressive symptoms and cardiac events, and anxiety was an independent predictor of cardiac events. The survey of elderly patients with hypertension and coronary heart disease found that the incidence of anxiety was higher than that of depression. The incidence of anxiety and depression in hypertension patients with diabetes mellitus and coronary heart disease increased. Among 89 patients, 21 (23.6%) were found to be depressed and 16 (18.0%) were anxious, indicating that there were not a few emotional disorders in elderly patients with cardiovascular diseases. Emotional disorders and cardiovascular diseases can cause and effect each other. Their somatization symptoms are confused with the clinical manifestations of cardiovascular diseases, which complicates the diagnosis of diseases and affects the therapeutic effect. The results showed that the SAS scores of patients with coronary heart disease and hypertension were significantly higher than those with single disease, while the SDS scores were similar, suggesting that the elderly with coronary heart disease and hypertension were in a more obvious state of anxiety than those with single disease. After 4 cases of simple arrhythmia were excluded from the control group, the SAS score of the observation group was still significantly higher than that of the control group. It was further confirmed that the anxiety of patients with both coronary heart disease and hypertension was more obvious than that of patients with coronary heart disease or hypertension alone, indicating that the anxiety state increased with the increase of cardiovascular disease. Anxiety is also the trigger of many cardiovascular events. There is a special interaction between high anxiety and abnormal autonomic nervous activity and endothelial dysfunction. Women are a risk factor for hypertension associated with anxiety. Diabetes mellitus is a high-risk group of depression and anxiety, which coexists with hypertension and coronary heart disease. Negative emotions and adverse psychosocial events can negatively regulate the incidence of diabetes and blood sugar by increasing insulin antagonistic hormones and decreasing insulin sensitivity through hypothalamus-pituitary-target gland axis. The number of female and diabetic patients in the observation group was significantly higher than that in the control group, which accorded with the law of the disease and the literature reports, and suggested that more attention should be paid to the diagnosis and treatment of affective disorders in the clinic for these patients.

SAS item analysis showed that the patients in the observation group had stronger complaints than those in the control group in unfortunate premonition, hand and foot tremor, fatigue, dyspnea, hand and foot tingling, frequency of urination, facial flushing and nightmares. Therefore, for elderly patients with coronary heart disease and hypertension with such complaints and obvious symptoms, we should be alert to anxiety and pay attention to detection.

In the face of depression and anxiety of elderly patients with cardiovascular disease, patients should be actively comforted and their pain should be alleviated as far as possible. Anxiety and depression can be treated with antianxiety and depression drugs, which can effectively improve the clinical symptoms of patients. In addition, strengthening psychological nursing intervention has very important clinical significance. Nurses should actively communicate with patients, understand their inner thoughts, and give effective psychological nursing interventions according to patients'psychological conditions, such as explaining the related knowledge of disease, prevention and related matters needing attention, and in-

struct their families to strengthen support and encouragement to patients, so as to enhance patients' confidence in treatment and improve treatment compliance.

In conclusion, the incidence of anxiety and depression in elderly women with cardiovascular disease is significantly higher than that in men. The incidence of anxiety and depression in patients with coronary heart disease and hypertension is higher than that in patients with coronary heart disease, hypertension or arrhythmia alone. Therefore, clinical attention should be paid to it and timely and effective treatment measures should be taken to improve the quality of life and prognosis of patients.

Intervention of adverse psychological behavior can prevent the occurrence and development of cardiovascular diseases. In the treatment of senile coronary heart disease and hypertension, anti-anxiety and depression therapy should become an important aspect of comprehensive treatment. We should attach importance to and learn to detect and detect abnormal psychological behavior and state. In addition to the application of traditional cardiovascular drugs and technical treatment, we should also adopt the knowledge and technology of behavioral medicine to intervene in order to control and treat diseases more effectively and reduce cardiovascular events. The occurrence and development of components.

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