Comparing anxiety in cardiac patients candidate for angiography with normal population

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Abstract

BACKGROUND: This study aimed to compare the anxiety of cardiac patients candidate for angiography with normal population in Isfahan province.

METHODS: The study population included 109 people, 53 cardiac patients referring to Chamran Cardiology Hospital in Isfahan for angiography and 56 people without cardiac disease. Data were collected by Cattle anxiety scale. In addition, demographic data of the sample population were collected at the same time using another questionnaire.

RESULTS: Independent t-test showed a significant difference between the anxiety of cardiac patients candidate for angiography and non-cardiac people (P < 0.001). Moreover, the differences between the amount of obvious anxiety and hidden anxiety in the two groups were significant (P < 0.001 for both).

CONCLUSION: The results showed that cardiac disease and diagnosis instruments, especially angiography, cause anxiety in patients. Therefore, evaluating this anxiety and applying proper techniques to reduce this anxiety is necessary.

Keywords: Anxiety, Cardiac Patients, Angiography, Normal Population.

Introduction

Anxiety is an unpleasant emotion expressed by words such as worry, apprehension, terror and fear. Recent studies show that anxiety is associated with pathology of heart disease.[1,2] Anxiety is a major problem in cardiac patients that can increase heart beat rate and blood pressure and also the risk of cardiac dysrhythmias.[3-5] In addition, it can cause delay in patients' return to work, decrease their quality of life and increase the risk of death. Therefore, treating these reactions can speed up recovery and increase life term.[6] High prevalence of anxiety can delay recovery from cardiac diseases.[7]

Technological developments of modern life have increased the prevalence of cardiac diseases including coronary artery disease. On the other hand, new advanced diagnosis methods, such as angiography, are developed. Angiography is used as an absolutely certain and standard method to diagnose coronary artery disease.[8] It is also an optional method for cardiac disease diagnosis, especially among adults, to find the most appropriate treatment method.[5]

Studies show that hospitalization and treatment environment are important causes of anxiety.[9] Besides, when patients are hospitalized for diagnosis methods including cardiac catheterization, the anxiety increases. Following cardiac diagnosis tests, such as angiography, various complications show up. One of the commonest complications is anxiety which affects angiography to a high extent.[10] Before angiography, patients experience a high level of anxiety.[5] Anxiety is an inevitable phenomenon but if it is more than the usual amount, it causes many physical and mental tensions for the individual and can have significant negative effects on various body organs, especially the heart.[4]

Studies on anxiety before angiography show that more than 82% of patients who underwent coronary artery angiography had fear and anxiety for the test and its results about their disease.[4] The incidence rate of anxiety in coronary artery patients before angiography is significantly higher than those without this disease.[11] Moreover, men suffering from coronary artery disease experience higher levels of anxiety compared to normal population.[12] Anxiety increases heart beat, breathing and blood pressure, all of which put the cardiac system of patients at risk and activate the mechanism of body heating and can even cause death. Anxiety has various symptoms

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including irritability, restlessness, insomnia, busy mind, biting nails, anorexia, hyperphagia and smoking.[13] To decrease the anxiety of patients before angiography, various methods can be used. However, before applying these methods, the anxiety of coronary patients should be compared to normal population to make us able to develop proper methods for reducing their anxiety.

Materials and Methods

This was a causal-comparative research which was performed from April to September 2008. The study population included 53 cardiac patients who referred to Chamran Hospital for angiography from 20.04.2008 to 22.09.2008. The control group included 56 healthy people who were randomly selected and diagnosed with no heart disease or any chronic diseases. Inclusion criteria consisted of patient's willingness to participate in the study, at least with a secondary school grade and an age of 30-65 years. The selection criterion for healthy people was having no cardiac disease or any other chronic diseases. Furthermore, the two groups were matched and justified in terms of demographic characteristics. Moreover, those who did not answer to more than two questions of the questionnaire were excluded. The researcher first introduced herself to the subjects, the study objective and the way to complete the questionnaires. She emphasized that their information would be confidential so that they completed them confidently. Data were collected using two questionnaires.

Cattle anxiety scale was used for assessment of general anxiety, hidden anxiety and obvious anxiety of the subjects. This questionnaire includes 40 three-choice questions. Reliability of this scale has been proved by retesting it many times and it has always been higher than 70 percent.[14] Validity of this questionnaire in the present study was obtained using Cronbach's alpha ($\alpha = 0.69$).

This test was standardized in 1988 on 24,894 students studying in schools of literature, humanities, art, law, theology, engineering, pharmacology, education, administration, economics, nursing and social sciences in Tehran. The population consisted of 16,352 males and 8,542 females.[15]

Cattle anxiety scale has 3 scores: 1-obvious anxiety score, 2-hidden anxiety score and 3-final score (obvious anxiety+ hidden anxiety). First, the final score including all 40 questions-hidden anxiety score (20 first questions) plus obvious anxiety (the second 20 questions). Second, the difference between the two scores including hidden anxiety and obvious anxiety or symptom anxiety.

In addition, it should be mentioned that a normalized score between 0 to 3 shows a calm, stolid, enduring, comfortable and stress free person. A score between 4 and 6 shows a moderate level of anxiety. A score of 7 or 8 shows a person who may be clearly anxious and neurotic. And finally a score of 9 or 10 shows a person who clearly needs help either for reforming his/her success or for counseling and psychiatric help.[14]

A demographic questionnaire collected subjects' demographic data including age, gender, marital status, education, etc.

Results

Demographic status of the subjects showed that out of 109 subjects (89 males and 20 females), 53 were cardiac patients and 56 subjects were healthy. The majority of study subjects were males (82.4%), married (92.7%), and aged 40-65 years old (81%). Their educational level was mostly associate degree (26.4%) or secondary school grade (25.5%). Very few participants were 30-35 years old (6.4%).

To analyze the data, frequency, mean standard deviation (SD) and t test. Before statistical calculations, the data were analyzed using Software SPSS$_{15}$.

Chi-square test showed that the two groups of patients and healthy subjects were identical in terms of demographic variables such as age, gender, marital status and education. Then, Kolmogorov-Smirnov and Levene tests were used for normal distribution of anxiety score and checking the equality of variances, respectively.

Table 1 shows the number, mean, SD, total anxiety, and also obvious and hidden anxiety of the two groups. As Table 1 presents, the mean of total anxiety was 34.43 and 43.17 for healthy patient groups, respectively. In order to compare the anxiety of cardiac patients candidate for angiography with healthy people,

Table 1. Scores of the subjects in the two groups of patient and healthy

Group	Index	Standard deviation	Mean	Number
Healthy	Hidden Anxiety	4.61	80.18	56
	Obvious Anxiety	6.75	62.15	56
	Total Anxiety	10.37	43.34	56
Patient	Hidden Anxiety	3.74	55.21	53
	Obvious Anxiety	6.38	62.21	53
	Total Anxiety	8.68	17.43	53

Table 2. Independent t-test for the two groups of healthy participants and patients

Anxiety	Standard error differences	Mean of differences	Double significance	Independent t-test	Significance level	Levine test for homogeneity of variance (f)
Hidden Anxiety	0.81	-2.74	0.001	-3.40	0.120	2.41
Obvious Anxiety	1.26	-1.5	0.000	-4.76	0.95	0.21
Total Anxiety	1.84	-8.74	0.00	-4.75	0.23	1.48

independent t-test was used for each of variables.

According to Table 2, variances of total anxiety, hidden and obvious anxiety in the two groups of were homogeneous. In addition, administering independent t-test to compare the anxiety of the two groups showed a significant difference between the total anxiety (P < 0.001). Moreover, the differences between healthy and patient groups in obvious anxiety and hidden anxiety were significant (P < 0.001 for both). Therefore, considering the study findings, it can be concluded that the difference between anxiety of the two groups is significant, i.e. cardiac patients candidate for angiography have more anxiety compared to healthy people.

Discussion

Because of increasing prevalence of cardiovascular diseases, factors to decrease the mortality rate including developing technology and methods for treatment and diagnosis of these diseases are also developing.[16]

Studies showed that new methods of cardiovascular disease diagnosis have reduced their mortality rate to 50%.[17] However, these methods have their own complications, one of which is anxiety. The results of the present study showed that anxiety of cardiac patient's candidate for angiography is significantly higher than normal population. In addition, the difference between the two groups in various dimensions of (overt or covert) anxiety is also significant (Table 2). It seems that the reason for this anxiety was unfamiliarity with treatment environment, advanced medical facilities and patients' previous experiences and was more important than playing the role of a heart disaese patient.

Results of this study were in accordance with the results of studies indicating one of the causes of anxiety in most cardiac patients as hospitalization and cardiac catheterization. They also suggested that before and during the angiography patients' anxiety increases.

According to the latest information of the US Cardiac Society, more than 2100 laboratories for cardiac catheterization exist in the USA[18] and about one million patients undergo invasive methods of cardiac diagnosis per year. In most cases, the invasive diagnostic methods cause patients a lot of stress and anxiety. Anxiety increases psychological and

physiological activity of body such as heart beat, blood pressure and heart output and this probably put the cardiovascular system of patients at risk.[3,19,20] If these symptoms are associated with tense situations such as heart catheterization, complications such as heart dis-rhythms, spasm or tearing of coronary artery would happen.[3,13,21] Therefore, it is necessary to assess the anxiety of patients and their ability to adjust with it before heart catheterization in order to decrease their anxiety and prevent its complication.[3,13]

Other studies showed that invasive methods such as angiography of coronary artery could be severely stressful for patients. Main causing factors for patients' stress level include their previous experience, pain, anxiety, unfamiliar environment and fear as well as belief in existence of the disease.[22] Stress has physiologic and biochemical responses which are unique for every person based on the time, severity and contact with the stressor. When a stressful factor such as pain, anxiety or a combination of both occurs, a mental and physiologic response happens. The activity of hypothalamus-hypophyseal-adrenal and sympathetic system nerves leads to a physical and mental response that is determined by increased heart beat, blood pressure and heart output. The amount of response to stress reflects the amount of received stress. Moreover, the main load of stress response is on cardiovascular system,[22] which is in agreement with the results of the present study.

Previous studies found that in spite of good results of angiography and the certainty of the cardiologist, patients leave the hospital with anxiety.[23]

The results of homodynamic variables during the hours before angiography show that systolic blood pressure, diastolic blood pressure, number of heart beat and breathing are increased and patients experience the highest tension and anxiety during the angiography.[24] Therefore, based on the present study and similar studies, cardiac patients candidate for angiography have high levels of anxiety, which is very dangerous for cardiovascular system. Thus, in order to take advantage of diagnosis methods while preventing the excessive anxiety of patients as a health threatening factor, it is necessary to assess the anxiety of the patients and control it before angiography with proper methods such as comforting

or touch-therapy and if necessary medications.

Based on the results of the present study, it can be concluded that cardiac patients candidate for angiography have a significantly higher level of anxiety compared to healthy people without cardiac diseases. In addition, physiologic variables such as heart beat and breathing rate is higher in these patients. These results suggest the necessity of paying attention to the anxiety of cardiac patients candidate for angiography in the level of primary prevention. For this purpose, comforting techniques, music-therapy and touch-therapy and if necessary medications should be used to decrease patients' anxiety and prevent the incidence of cardiovascular complications.

Conflict of Interests

Authors have no conflict of interests.

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