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Determination of health anxiety, anxiety, and somatosensory amplification levels in individuals with normal coronary angiography

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ABSTRACT

The objective of the present study is to determine the somatosensory amplification, anxiety, and depression levels in patients with normal coronary arteries. Thirty-five patients with normal coronary arteries and 35 healthy individuals of similar age and gender as the patient group were included in the study. Somatosensory Amplification Scale (SSAS), Health Anxiety Inventory (HAI-18), Penn State Anxiety Scale (PSWQ), Beck Anxiety Inventory (BAI), and Beck Depression Inventory (BDI) were applied to all participants. Comparison of the patient group with the control group demonstrated that SSAS (22.7 ± 8.2; 18.5 ± 5.98; p = 0.018), BAI (15.4 ± 9.43; 9.4 ± 7.3; p = 0.004), BDI (24.9 ± 13.5; 13.7 ± 7.5; p < 0.001), PSWQ (55.3 ± 13.7; 33.8 ± 6.7; p < 0.001), and HAI-18 (18.8 ± 8.7; 12.3 ± 7.1; p = 0.001) scores were statistically significantly higher in the patient group. Furthermore, a positive correlation was found between SSAS, BAI, BDI, PSWQ, and HAI-18 scores. It was found that concerns about disease prevailed in patients having normal coronary arteries, the patients continued to amplify their somatic sensations, and their anxiety and depression scores were higher than those of healthy individuals. Thus, the necessity of these interventions should be assessed in detail in the future.

1. Introduction

Certain individuals experience intensive anxiety after being diagnosed with a disease or following medical interventions (Karanci and Dirik, 2003). On the basis of our clinical observations, a certain amount of anxiety is experienced after angiography for the diagnosis of cardiovascular diseases; however, even when the results of angiography are considered normal, anxiety symptoms can last for months in these individuals. Although there are publications that investigated pre-angiography intervention anxiety (Yılmaz et al., 2012), there are only a few studies that have actually investigated the anxiety levels and quality of life in patients during the post-angiographic period (Gül et al., 2015; Özdemir et al., 2015).

The objective of the present study is to determine somatosensory amplification, anxiety, and depression levels in patients who underwent coronary angiography for their cardiac complaints, but whose coronary arteries were found to be normal. The study was also conducted to assess the relationships among these parameters.

2. Material and method

In this cross-sectional study, 35 patients with cardiac complaints between the ages of 18–35 years, whose coronary angiography results were normal and who visited our hospital during the 6 months before the study was conducted, were included. All patients confirmed that the angiography was conducted on indication. Exclusion criteria from the study were determined as non-normal angiography results, a physical or psychological disease that could prevent cooperation and communication during the implementation of data collection tools, and illiteracy of the patient. Patients with a diagnosis of cardiac illness such as valvular heart disease and heart failure and patients with known chronic diseases such as hypertension, diabetes, and endocrine disorder were also excluded from the study. All patients were interviewed after the angiography procedure and prior to their discharge. An appointment was set with each patient for one month after their discharge so that the patient could participate in the study. Since coronary angiography is an invasive process, certain psychological effects could develop after the operation. To exclude these responses related to the operation, a one-month period was considered appropriate. Furthermore, it was decided that extension of this period could enable additional disrupting factors, and thus, the survey forms were administered one month after the angiography.

Appointments were set with a total of 40 patients; however, only 35 patients kept their appointments. Somatosensory Amplification Scale (SSAS), Penn State Worry Questionnaire (PSWQ), Beck Anxiety

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Inventory (BAI), Beck Depression Inventory (BDI), and Health Anxiety Inventory (HAI-18) were administered to the patient group. Furthermore, a control group that included individuals with similar socio-demographic characteristics such as age and gender was formed, and SSAS, PSWQ, BAI, BDI, and HAI were also administered to this group. For all participants, a socio-demographic and clinical data form, prepared by the authors, was completed. Authors obtained the approval of the local ethics committee, and the study was conducted in compliance with Helsinki Declaration criteria.

2.1. Socio-demographic and clinical data form

A socio-demographic data form designed by the authors based on their clinical experiences and reviewed literature, and in accordance with the objectives of the study, was administered. The semi-structured form included socio-demographic information such as age, gender, marital status, educational background, occupation, domicile, income level, family structure, and clinical data such as duration of the related disease.

2.2. Somatosensory Amplification Scale (SSAS)

This is an evaluation tool that measures how the patients experience somatic symptoms and how prone they are to somatization. The scale includes 10 items. It was developed by Barsky et al. (1988). The total of the scores obtained in all items is accepted as the amplification score.

2.3. Penn State Worry Questionnaire (PSWQ)

This scale measures pathologic, chronic, and uncontrollable levels of anxiety. It includes a total of 16 questions. Each item is scored between 1 and 5 points. An increase in total score reflects an increase in the anxiety level. The scale was developed by Meyer et al. (1990).

2.4. Beck Anxiety Inventory (BAI)

This inventory was developed by Beck et al. (1988). It measures the frequency of anxiety symptoms that an individual experiences and includes a total of 21 questions. Each item is scored with cumulative points in the range of 0–3. A high total score reflects an individual with high anxiety.

2.5. Beck Depression Inventory (BDI)

This inventory was developed by Beck (1961). It is conducted to determine the risk of depression in a patient and to measure the level and severity of depressive symptoms. It includes a total of 21 questions. Each item is assigned 0–3 points cumulatively, and these scores are added to obtain the total scale score. Total score varies between 0 and 63 points.

2.6. Health Anxiety Inventory (HAI-18)

This is a self-reporting scale developed by Salkovskis et al. (2002) and includes 18 items. The first 14 items are designed as a four-point Likert-type scale and include sequential responses that inquire about the psychological condition of the patient. The remaining 4 items ask the patients about their psychological condition in case they had a serious disease. Each item is scored between 0 and 3 points. A higher score reflects higher health anxiety.

2.7. Statistical evaluation

Data analysis was conducted with SPSS for Windows version 22.0 software. Categorical variables were compared with the chi-square test.

Table 1
Comparison of socio-demographic characteristics of patient and control groups.

	Patient group	Control group	*p*
Age (years)	51 ± 10	49 ± 9	NS
Gender (female) n	20 (%57)	17 (%49)	NS
Marital status (married) n	29 (%83)	26 (%74)	NS
Domicile (center) n	21 (%60)	19 (%54)	NS
Education Primary school n	27 (%77)	25 (%71)	NS
High school n	6 (%17)	10 (%29)	NS
College n	2 (%6)	–	NS
Number of employees n	9 (%26)	11 (%31)	NS
Income level (low) n	14 (%40)	18 (%51)	NS
Smoking n	10 (%29)	12 (%34)	NS
Psychiatric treatment history n	13 (%37)	5 (%14)	< 0.05
Angiography history	10 (%29)	–	< 0.05

NS: Non Significant ***p* < 0.05:** significance level

Quantitative data are presented as mean ± standard deviation (SD). Normal distribution was tested with the Kolmogorov–Smirnov test with Lilliefors correction. Student's *t*-test was used to compare data with normal distribution, and the Mann-Whitney *U*-test was used to compare data without normal distribution. Pearson correlation analysis was used to investigate the correlations between the scales. P < 0.05 values were considered statistically significant.

3. Results

Statistical analysis demonstrated that there was no significant difference between patient and control groups based on socio-demographic characteristics such as age, gender, educational background, employment, and smoking status (Table 1). However, it was found that psychiatric treatment history was significantly higher in the patient group than in the control group. It was determined that 29% of the patient group had a previous coronary angiography. BAI score was 15.4 ± 9.4 in the patient group and 9.4 ± 7.3 in the control group, and there was a significant difference between the two groups based on anxiety scores ($p < 0.001$). Further, BDI score was 24.9 ± 13.5 in the patient group and 13.7 ± 7.5 in the control group, and there was a significant difference between the two groups based on depression scores (p=0.001). Analysis of somatosensory amplification levels of patient and control groups demonstrated that the mean score for the patient group was significantly higher than that of the control group (22.7 ± 8.2 and 18.5 ± 5.97, respectively, $p = 0.018$). PSWQ mean score was 55.3 ± 13.7 in the patient group and 33.8 ± 6.7 in the control group. The difference between the two groups was significant ($p < 0.001$). The Health Anxiety Inventory mean score was 18.8 ± 8.7 in the patient group and 12.3 ± 7.1 in the control group, and there was a significant difference between the two groups ($p < 0.001$) (Table 2). A positive correlation was found between SSAS and BAI, BDI, PSWQ, and HAI scores ($r = 0.418$, $p < 0.001$; $r = 0.412$, $p < 0.001$; $r = 0.296$, $p = 0.013$; $r = 0.399$, $p = 0.001$, respectively).

Table 2
Comparison of patient and control groups obtained in data collection tools.

	Patient group Mean ± SD	**Control group Mean ± SD**	***P***	**df**
BAI	**15.4 ± 9.4**	**9.4 ± 7.3**	***p*=0.004**[a]	**63.882**
BDI	**24.9 ± 13.5**	**13.7 ± 7.5**	***p*=0.001#**	**52.866**
PSWQ	**55.3 ± 13.7**	**33.8 ± 6.7**	***p* < 0.001#**	**49.202**
SSAS	**22.7 ± 8.2**	**18.5 ± 5.97**	***p*=0.018**[a]	**62.236**
HAI-18	**18.8 ± 8.7**	**12.3 ± 7.1**	***p*=0.001#**	**65.375**

SD: Standard deviation, #Mann Whitney-*U* test,
BAI: Beck Anxiety Inventory, **BDI:** Beck Depression Inventory, **PSWQ:** Penn State Worry Questionnaire,
SSAS: Somatosensory Amplification Scale, **HAI-18:** Health Anxiety Inventory
***p* < 0.05:** significance level.
[a] Student *t*-test