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Depression, anxiety, alexithymia and somatosensory sensitivity in patients with benign palpitation

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ABSTRACT

Objective: The aim of this study is to compare the frequency of depression, anxiety, alexithymia and somatosensory sensitivity in patients with benign palpitation with healthy controls.

Method: Sixty-one patients with palpitation and 59 age- and sex-matched control subjects were enrolled. All study subjects were undergone thorough cardiac evaluation, and patients with palpitation also had echocardiography and 24-hour ECG monitoring to rule out significant arrhythmias, coronary artery disease and structural heart disease. All subjects were assessed by Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Toronto Alexithymia scale, Whiteley Index (WI) and Somatosensory Amplification Scale (SAS).

Results: Patients with benign palpitation had significantly increased BAI, BDI, WI and SAS scores. Anxiety is the only independent predictor of benign palpitation (odds ratio = 1.12, 95% confidence interval = 1.05–1.19, $p < 0.001$).

Conclusion: This study shows that patients with benign palpitation had increased anxiety levels and somatization disorders. So an integrated psycho-cardiological approach is needed in this special population.

Introduction

Palpitation is an unpleasant disorder characterized by a sensation of irregular or forceful beating of the heart. It is one of the most common reasons for referral to a cardiologist. More than 50% of patients referred to cardiology clinics for further evaluation have no identifiable cardiac cause [1]. Despite excellent prognosis, these patients have persistent symptoms, emotional distress and reduced quality of life [2].

Palpitation may be observed as a somatic manifestation of psychiatric disorders; anxiety and depressive disorders [3,4]. Moreover, palpitation is one of the criteria of the panic attack which may occur in the context of mental disorders (e.g. anxiety disorders, depressive disorders) according to DSM 5 (Diagnostic and statistical manual of mental disorders fifth edition) diagnostic system [5]. So an integrated approach is warranted in patients with benign palpitation.

Somatization may be defined as the expression of psychological conflicts in somatic idioms. By this mechanism, those feelings that are not put into words may be expressed in bodily complaints. Alexithymia which may be defined roughly as the inability to identify and articulate feelings has been reported to be a precursor of somatization. Hypochondriasis and somatosensory amplification constructs tap the tendency of the patients to exaggerate their somatic sensations. The aim of this study was to examine the frequency of alexithymia, anxiety, depression and somatosensory sensitivity in patients with palpitation referred to cardiology outpatient clinic. We investigated whether psychological distress and the tendency to somatize have contributed to the perception of palpitation.

Methods

Sociodemographical and clinical data form

All participants were assessed using sociodemographic data form, which was created for this study. The form consists of age, gender, education level, marital status and cardiac history.

Cardiac assessment

All study subjects have undergone thorough cardiac evaluation and patients with palpitation also had transthoracic echocardiography and 24-hour Holter monitoring. Patients with a history of coronary artery disease, heart failure and rhythm other than sinus were excluded. Palpitation is defined as is an unpleasant disorder characterized by a sensation of irregular and/or forceful beating of the heart. Palpitation is

considered benign if there is no underlying heart disease and significant arrhythmias such as paroxysmal atrial fibrillation, supraventricular tachycardias and ventricular arrhythmias other than single premature beats on Holter monitoring.

Self-report psychiatric questionnaires

Beck Depression Inventory (BDI)

BDI is Likert type, and self-report screening questionnaire for the assessment of depression severity. It consists of 21 items and measures emotional, cognitive and motivational symptoms of depression. BDI was developed by Beck et al. and the validity and reliability of BDI was performed in Turkish language [6,7].

Beck Anxiety Inventory (BAI)

BAI, which measures the risk and severity of anxiety, is Likert type, and self-report screening questionnaire. It contains 21 items and the validity and reliability of Turkish form was also studied [8,9].

Whiteley Index (WI)

WI is a validated and self-report scale for screening hypochondriasis. According to factor analysis, three factors were determined; disease phobia, disease conviction and bodily preoccupation. Seven-item version of WI was validated and used with good psychometric properties in several studies and Turkish validity and reliability was studied [10,11].

Somatosensory Amplification Scale (SAS)

SAS measures the patient perception of normal bodily sensations as being relatively intense and discomfort. SAS consists of 10 items and all items are rated on a 1 (not at all) to 5 (all the time) point Likert scale. The validity and reliability study was performed in clinical and nonclinical samples [12] and this scale applicable to the patients with psychiatric or medical conditions. Validity and reliability of SAS was performed in Turkish language [13].

The 20-item Toronto Alexithymia Scale (TAS-20)

TAS-20 evaluates the alexithymia with 20 items and all items are rated on a five-point Likert scale. TAS-20 consists of three factors and these factors are difficulty identifying feelings (DIF; distinguishing between feelings and somatic sensations), difficulty describing feelings (DDF), externally oriented thinking (EOT), respectively, consist of seven, five and eight items. TAS-20 has been reported to show validity and reliability in different samples and also in Turkish population [14–16].

The study was approved by the local ethics committee and was carried out in accordance with the declaration of Helsinki.

Statistical analyses

The Statistical Package for the Social Sciences (SPSS) 17.0 for Windows was used for all analyses. Chi-square tests were used to compare categorical variables. Continuous variables were compared by Student's t-test or Mann–Whitney U test according to distribution. The correlation between TAS-20 score and other scores were compared with Spearman's Correlation test. Binary logistic regression analysis was conducted using presence of palpitation as dependent variable and BDI score, BAI score, WI score, SAS score and TAS-20 score as independent variables. The selection of variables in the equation was based on enter method.

Results

Table 1 summarizes clinical characteristics of the study population. The age, gender and employment status of the benign palpitation group and control group were statistically insignificant. Control group has higher high school graduates. The frequency of hypertension and diabetes mellitus was evenly distributed within the groups. Patients with benign palpitation had significantly increased Beck Anxiety scores compared to controls (18.2 ± 10.7 vs 12.1 ± 10.8, $p < 0.001$). The Beck Depression scores were 11.9 ± 8.4 and 9.7 ± 8.2 ($p = 0.03$) in palpitation group and control group, respectively. Whitely index and somatosensory amplification scores were also significantly elevated in the palpitation group (Table 2). Total alexithymia scores were statistically insignificant between the palpitation group and the control, respectively (50.9 ± 11.3 vs 53.1 ± 11.1, $p = 0.82$). The frequency of alexithymia in the benign palpitation group was 28% and 31% in the control ($p = 0.51$). TAS subscale scores were not different between the palpitation group and the control, respectively (DIF: 16.8 ± 6.9 vs 15.6 ± 5.4, $p = 2.27$, DDF: 12.6 ± 4.4 vs 12.9 ± 3.9, $p = 0.69$, EOT: 21.4 ± 4.1 vs 22.5 ± 3.5, $p = 0.11$). There was a weak but significant correlation between alexithymia and the other psychometric scores (Table 3). Association between psychometric scores and the presence of palpitation were as follows: BAI score: odds ratio (OR) = 1.12, 95% confidence interval (CI) = 1.05–1.19, $p < 0.001$; BDI score: OR = 0.94, 95% CI = 0.88–1.01, $p = 0.08$; SAS score: OR = 1.02, 95% CI =

Table 1. Sociodemographic characteristics and clinical data of the study population.

	Palpitation (n = 61)	Control (n = 59)	p
Age	43.9 ± 9.8	44.6 ± 16.3	0.31
Female %	35 (57%)	36(58%)	0.37
Education %			
No HS Diploma	60.6	51.2	<0.01
HS graduate	39.4	48.8	
Marital status %			
Married	85.8	84.7	
Divorced	6.5	8.2	0.24
Never married	7.7	7.1	
Employed %	34.4	35.5	0.46
Hypertension %	39.3	38.9	0.41
Diabetes mellitus %	31.4	28.8	0.63

Note: HS: high school.

Table 2. Comparison of the psychometric scores.

Scores	Palpitation (n = 61)	Control (n = 59)	p
Beck Depression Inventory	11.9 ± 8.4	9.7 ± 8.2	0.03
Beck Anxiety Inventory	18.2 ± 10.7	12.1 ± 10.8	< 0.001
Whitely Index	2.6 ± 1.8	2.0 ± 1.8	0.04
Somatosensory Amplification Scale	28.3 ± 8.5	25.9 ± 8.6	0.04
Toronto Alexithymia Scale	50.9 ± 11.3	53.1 ± 11.1	0.82

Table 3. Correlations between alexithymia (TAS-20 total) and other psychometric scores.

	r	p
Beck Depression Inventory Score	0.28	< 0.001
Beck Anxiety Inventory Score	0.18	0.015
Whitely Index Score	0.25	0.001
Somatosensory Amplification Scale Score	0.32	< 0.001

0.96–1.09, $p = 0.43$; TAS score: OR = 0.96, 95% CI = 0.92–1.01, $p = 0.14$; WI score: OR = 1.01, 95% CI = 0.75–1.33, $p = 0.99$ (Table 4). Anxiety is the only independent predictor of the presence of benign palpitation.

Discussion

Palpitation is often considered as a cardiovascular symptom. However, palpitation is not synonymous with dysrhythmia. Some patients with significant rhythm disturbances may be asymptomatic while others with normal rhythm may complain of palpitation. The subjective nature of this symptom complicates the triage of the patient with palpitation. Unfortunately, the physician–patient interaction in cardiology clinics often stays in the shade of high-technology procedures [17]. The cardiological approach to a patient with palpitation is mainly to rule out cardiac causes to differentiate benign palpitation from malignant arrhythmias and treat the latter accordingly and to reassure the patients with benign palpitation. Unfortunately, providing reassurance about the benign nature of the symptom often provides little relief with ongoing dissatisfaction and repetitive testing [18]. Furthermore, patients with ongoing palpitation have decreased quality of life [19].

Unlike chest pain, there is little data about the psychiatric disease frequency in patients with palpitations in the literature. Jonsbu et al. reported a rate

Table 4. Binary regression analysis when presence of palpitation is dependent variable.

	OR	p	95% Confidence lower bound	95% Confidence upper bound
BAI Score	1.12	< 0.001	1.05	1.19
BDI Score	0.94	0.08	0.88	1.01
WI Score	1.01	0.99	0.75	1.33
SAS Score	1.02	0.43	0.96	1.09
TAS Score	0.96	0.14	0.92	1.01

Note: BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; WI, Whitely Index; SAS, Somatosensory Amplification Scale; TAS, Total Alexithymia Score.

of 39% DSM-IV psychiatric disorder in patients with noncardiac chest pain and benign palpitations referred for cardiological investigation. In their study, patients with palpitation were younger and higher in female number in comparison to patients with noncardiac chest pain. Depression score at attendance predicted significant complaints at 6 months follow-up [20]. In another study, patients referred to Holter monitoring for palpitation were evaluated and 45% patients had at least one lifetime anxiety or depression and 25% have current disorders. Panic disorder and somatization disorder symptoms were more prevalent in the palpitation group than in healthy controls and these patients rated their overall health status worse [21]. In our study, 46% of patients with benign palpitation had mild mood disorders (BDI score > 10) and 26% had at least borderline clinical depression (BDI score > 16) according to BDI scores and 35% had at least moderate anxiety levels (BAI score > 21).

There are little data on somatization and hypochondriasis status in patients with benign palpitation. In a recent study, patients with palpitation were screened by 28-item general health questionnaire. Alijaniha et al. found that somatization and anxiety are significantly higher and social dysfunction is significantly impaired in the palpitation group [22]. Barsky et al. also found that symptoms of somatization, hypochondriacal concerns and impairment of intermediate activities are higher in patients with palpitation [23]. In the present study, we found that hypochondriasis assessed by Whitely index is higher in the diseased group as well as somatosensory amplification scores. Somatosensory amplification refers to the tendency to experience a somatic sensation as intense, noxious and disturbing [12]. Our results showed that benign palpitation has a somatization component necessitating a psychosomatic approach. Psychological assessment of these patients might help to alleviate their suffering.

To our knowledge, there is no study in the literature studying the role of alexithymia in patients with palpitation. Alexithymia is a sub-clinical construct, traditionally characterized by difficulties identifying and describing one's own emotions. Despite the clear need for interoception (interpreting physical signals from the body) when identifying one's own emotions, little research has focused on the selectivity of this impairment. While it was originally assumed that the interoceptive deficit in alexithymia is specific to emotion, recent evidence suggests that alexithymia may also be associated with difficulties perceiving some non-affective interoceptive signals, such as one's heart rate [24]. Although total TAS scores and subscale scores were similar in benign palpitation group and control, we found a high frequency of alexithymic patients.

In binary logistic regression analysis, anxiety is the only independent predictor of the presence of palpitation. This may be related to the raised awareness of anxiety-prone patients to their somatic sensations. Anxiety may lead to the catastrophization of the body-related symptoms. We also would like to draw attention to the nature of patients consulting to the cardiology clinic. Not every patient with a benign palpitation would like to be referred to cardiology. There would be plenty of patients in the normal population who chose not to come to the hospital. Those who come may do so because their anxiety levels are higher and hence they are more ready to somatize.

Our findings suggest that anxiety, depression, somatosensory amplification and hypochondriasis may be important psychological factors in the etiology and persistence of palpitation. In routine cardiological care, many patients with depression, anxiety and other psychosocial risk factors remain unrecognized. So cardiologists' awareness and collaboration with psychiatrists is of utmost importance for the proper management of patients with palpitation. An integrated approach to palpitation patients would help us not just seeing the symptom but also the person behind the symptom.

Acknowledgement

Disclosure statement

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