Comparison of Temperamental Features, Anxiety, and Depression Levels Between Non-Cardiac Angina and Acute Coronary Syndrome

Fatih GÜMÜŞER¹, Kürşat ALTINBAŞ², İlker Murat ÇAĞLAR³, İsmail UNGAN³

¹Clinic of Cardiology, Private Acıbadem Hospital, İstanbul, Turkey

²Department of Psychiatry, Çanakkale Onsekiz Mart University, Faculty of Medicine, Çanakkale, Turkey

³Clinic of Cardiology, Bakırköy Dr. Sadi Konuk Training and Research Hospital, İstanbul, Turkey

ABSTRACT

Introduction: In many studies that are aimed to determine the psychological profile of patients admitted to the emergency unit with non-cardiac angina (NCA), it was indicated that psychiatric problems, less effective problem-solving, and alexithymia are more common in NCA compared with acute coronary syndrome (ACS) patients. In this study, aiming to find predictive psychological clinical features, we compared the temperament, anxiety, and depression scores of patients with NCA and ACS.

Methods: Sociodemographic variables of 63 patients (n=41 NCA, n=22 ACS) who were admitted to the emergency unit with chest pain were recorded. TEMPS-A scale was used for defining temperamental features, and Hospital Anxiety and Depression Scale (HADS) was used to measure anxiety and depression levels of patients in both groups. Sociodemographic variables and TEMPS-A and HADS scores were compared with χ^2 and independent-groups t-test between the NCA and ACS groups.

Results: The NCA and ACS groups were similar in terms of sociodemographic variables. There was no statistical difference between groups in HDS (p=.12) and HAS (p=.39) scores and TEMPS-A scale depressive (p=.41), cyclothymic (p=.08), hyperthymic (p=.06), and anxious (p=.29) temperament scores. But, irritable temperament scores were significantly higher in the NCS group (p=.04).

Conclusion: We believe that our findings will provide a basis for further studies in the diagnosis and treatment of NCA by contributing to the definition of NCA patients' psychological profiles. (Archives of Neuropsychiatry 2014; 51: 363-367)

Key words: Non-cardiogenic chest pain, temperament, anxiety, depression

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Introduction

The relation between emotional stress factors and cardiovascular diseases has been questioned all along. Throughout the world and in different cultural groups, physical symptoms are the most common individual expressions of social problems and emotional distress, and chest pain is one of the most commonly observed physical symptoms that cannot be medically explained (1). In 1800s, Osler mentioned the difficulty in the differentiation of chest pain related with coronary artery disease from non-cardiac chest pain (hysterical pseudoangina) (2). It has been reported that approximately 6 million people present

yearly to emergency departments with the complaint of chest pain in the USA, and approximately 8 billion dollars are spent for diagnosis and treatment (3). This differentiation is not only difficult for primary care physicians but it is also difficult for cardiologists. Hence, a diagnosis of non-cardiac angina (NCA) is made by cardiologists after physical examination and investigations in more than half of the patients with chest pain (4). During the follow-up, a majority of the patients continue to experience chest pain despite negative cardiac enzymes and normal cardiac examinations, and their functionalities are markedly affected in relation with the anxiety that they experience (5). It is known that the levels of anxiety and depression are high

Correspondence Address

Dr. Kürşat Altınbaş, Çanakkale Onsekiz Mart Üniversitesi, Psikiyatri Anabilim Dalı, Çanakkale, Türkiye
Phone: +90 286 218 00 18 E-mail: kursatalinbas@yahoo.com Received: 06.08.2012 Accepted: 13.04.2013
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in these patients, and chronic pain is related with somatization of anxiety and depression (6,7). It has been shown that a high rate of subthreshold and suprathreshold psychiatric symptoms are observed in NCA patients in many studies (8,9,10). In many studies directed to determine the psychological profile of NCA patients, it has been found that psychiatric problems (10,11,12), less effective problem-solving ability (13,14,15), and alexithymia (2,26,27) are more commonly observed in NCA patients than in acute coronary syndrome (ACS) patients. All these studies aim to find predictive psychological clinical markers by determining the psychological profile of NCA patients. However, strong predictive clinical markers have not been found so far, and this issue continues to arouse interest.

On the other hand, there are many studies reporting that temperament features that we can express as the tendency to show a certain congenital structural automatic reaction to emotional stimuli or a biological and genetic component of personality (18,19) are related with treatment response and disease course in non-psychiatric diseases (20,21,22,23,24). We aimed to compare the temperament features of NCA patients and ACS patients presented to the emergency departments with a complaint of chest pain based on the observation that anxious and irritable temperamental features are more prominent in the NCA patient group.

Methods

Participants

Patients above the age of 18 years who visited the emergency departments of Dr. Siyami Ersek Cardiothoracic Surgery Education and Research Hospital and Dr. Sadi Konuk Education and Research Hospital with a complaint of chest pain that lasted at least for 5 min in the last 24 h and who signed the informed consent form for participation in the study were included in the study. The patients who had a psychiatric diagnosis and those who were receiving treatment at the time of evaluation as well as patients who were below the age of 18 years and the patients whose electrocardiography (ECG) could not be performed and cardiac enzyme levels could not be measured were excluded from the study. The TEMPS-A scale and Hospital Anxiety and Depression Scale (HADS) were subjected to the patients who had no active chest pain after investigations and necessary interventions and those who accepted to participate in the study; they were asked to fill these scales under the supervision of the investigator. In addition, the sociodemographic data form developed by the investigators was filled. The patients who were found to have ischemic ECG change and/or a troponin level of >0.1 ng/ml after cardiological examination and investigations were considered as having ACS. Three patients were excluded from the study because they had a diagnosis of active psychiatric disorder and were receiving treatment for this. Conclusively, 41 patients diagnosed with NCA who were found to have no pa-

thology that could lead to chest pain after cardiological examination and investigations, and 22 patients who had a diagnosis of ACS with ECG change and/or a troponin level of >0.1 ng/mL were included in the study. The data obtained from the patients were statistically analyzed.

Data Collection Tools

Sociodemographic data form: This form that was developed by the investigators is composed of the demographic data of the participants, including age, gender, weight, education level, and marital status, as well as results of cardiological examinations and investigations of the patient group.

TEMPS-A (Temperament Evaluation of Memphis, Pisa, Paris and San Diego Autoquestionnaire): This questionnaire was developed by Akiskal (25) and is composed of 100 items to determine depressive, cyclothymic, hyperthymic, irritable, and anxious temperament. The person answers the items as yes or no considering his/her whole life. The Turkish validity and reliability study of this questionnaire was performed by Vahip et al. (26).

Hospital Anxiety and Depression scale (HADS): The HADS was developed in 1983 by Zigmond et al. (27) and was designed to screen mood disorders in populations with a medical disease. HADS is filled in by the patient and is composed of 14 items; the items include four properties, and two subdimensions evaluate depression and anxiety. The depression subscale is scored between 0 and 21; a score of 0–7 is considered normal, a score of 8–10 is considered mild mood disorder, a score of 11–14 is considered moderate mood disorder, and a score of 15–21 is considered severe mood disorder. The Turkish validity and reliability study of the scale was performed by Aydemir et al. (28) in 1997.

Statistical Analysis

Statistical Package for Social Sciences 13.0 (SPSS Inc., Chicago, IL, USA) was used for statistical analyses. Chi-square test was used for comparison of categorical variables, and t-test was used for the comparison of the ages in the NCA and ACS groups. Independent t-test was used to compare the TEMPS-A scores of the groups because they were compatible with the normal distribution. A p value of <0.05 was considered significant for all tests.

Results

When the sociodemographic properties of the groups were examined, it was observed that the majority of the patients were males ($n=50$, 79.4%). The female/male ratio was 20.6% (7/34) in the NCA group and 37.5% in the ACS group. The mean age was 49.3 ± 12.7 in the study population, 50.2 ± 14.5 in the NCA group, and 47.7 ± 8.7 in the ACS group. When the groups were compared in terms of their sociodemographic properties, no

Table 1. Comparison of the sociodemographic properties of the groups

Variable	NCA		ACS		x ²	p
	n	%	n	%		
Gender						
Male	34	82.9	16	72.7	.91	.35*
Female	7	17.1	6	27.3		
Total	41	100	22	100		
Marital status						
Married	36	87.8	18	81.9	.42	.71*
Single	5	12.2	4	18.1		
Total	41	100	22	100		
Education						
Primary school	24	58.5	15	68.2	1.64	.44*
High school	8	19.5	5	22.7		
University	9	22.0	2	9.1		
Total	41	100	22	100		
Age (years)	Mean		Standard deviation		t	P
NCA	50.2		14,5		.87	.39*
ACS	47.7		8,7			
NCA: Non-cardiac angina; ACS: Acute coronary syndrome; SD: standard deviation *p>.05 statistically insignificant						

Table 2. Comparison of the groups in terms of TEMPS-A temperament scores and HADS scores

	Group	Mean	SD	t	p
Depressive	NCA	8.1	3.7	.8	.41
	ACS	7.2	3.9		
Cyclotymic	NCA	9.5	3.9	1.8	.08
	ACS	7.5	4.2		
Hypertymic	NCA	11.5	4.2	1.9	.06
	ACS	9.5	3.4		
Irritable	NCA	6.9	4.1	2.0	.04*
	ACS	4.9	2.9		
Anxious	NCA	10.3	6.3	1.1	.29
	ACS	8.6	6.2		
HDS	NCA	7.8	4.1	1.6	.12
	ACS	6.4	2.8		
HAS	NCA	9.1	3.9	.9	.39
	ACS	8.1	4.1		

HDS: Hospital Depression Scale; HAS: Hospital Anxiety Scale; SS: standard deviation. NCA: Non-cardiac angina; ACS: Acute coronary syndrome. *p<.05 statistically significant

statistically significant difference was found in terms of age (p=.39), gender (p=.34), education status (p=.27), and marital status (p=.52) (Table 1).

When the HADS scores of the groups were examined, both the depression scores and anxiety scores were higher in the NCA group; however, the difference was not statistically significant (p=.13 for HDS; p=.39 for HAS; Table 2). When the TEMPS-A temperament scores were compared between the two groups, all temperament scores were found to be high in the NCA group, while only irritable temperament scores were significantly higher in the NCA group (p=.04; Table 2).

Discussion

Our findings showed that the irritable temperament scores of the NCA group which were higher compared with the ACS group was important in terms of determining psychological profiles and predictive clinical markers in individuals with unexplained chest pain in clinical practice. Thus, in a meta-analysis performed with this objective, it was reported that NCA was observed more commonly in females at younger ages and in anxious individuals (29). It has been emphasized that symptoms including NCA, anxiety-related palpitation, and dyspnea are strongly related with females (30). Although the fact that the NCA group mostly comprised male patients in our study was in contrast with the literature findings, the finding that the higher prevalence of ACS is in males is compatible with our findings (31). The fact that the NCA group mostly comprised male patients may be related with the specific characteristic of the hospitals included in the study.

On the other hand, the rates of psychiatric and physical diseases are also considerably high in individuals with the complaint of NCA (2,4,10,32). It has been reported that the rates of anxiety disorders and depression are considerably high in the NCA group (2,4,5,6,10). In our study, the mean HADS scores showed the presence of the symptoms of mild depression and anxiety both in the ACS and NCA groups. In a current systematic review, Webster et al. (33) have reported that anxiety and depression symptoms are observed at a similar rate in the NCA and ACS groups, which is in accordance with our study. However, the lack of psychiatric examination that was a limitation of our study makes it difficult to make further interpretation, although the patients with a history of active psychiatric disease were excluded from the study.

Probably the most important finding of our study was the fact that the irritable temperament scores were found to be higher in the NCA group. Lack of a study with a similar design evaluating temperamental features in the NCA group makes it difficult to discuss our findings. However, information obtained from studies examining the psychological profile of individuals with a complaint of NCA are notable. Studies have reported that alexithymia, anger, somatosensory amplification, and continuous and internal anger are markedly observed in the NCA group (34), and these individuals mostly take shelter in despair instead of a self-confident approach and aiming to obtain solution of the

problem for coping with stress (2,5,15). Hence, in accordance with all these features, Akiskal et al. described these individuals with the abovementioned features as mostly pessimist, irritable, tending to muse, and impulsive while defining the features of irritable temperament (35,36). Accordingly, it can be concluded that individuals with irritable temperamental features present to emergency departments with cardiac complaints by way of somatosensory amplification. In this aspect, anxious temperamental features may also be expected to be more prominent in the NCA group. However, the anxious temperament scores were similar in the NCA and ACS groups in our study. This may be related with the relatively small size of the sample.

Although our study is the first study that compares temperamental features of individuals with NCA and ACS, there are some limitations that prevent the generalization of the findings. The main limitations of our study include the small sample size, particularly in the ACS group, cross-sectional assessment, and lack of psychiatric evaluation. Further multi-center, longitudinal follow-up studies with a higher number of participants examining the character and personality features in addition to temperamental features will provide better definition of the psychological profile of individuals with NCA and contribute to a reduction in healthcare expenses with accurate diagnosis and treatment.

Despite several limitations, our study is the first study that compares temperamental features between the NCA and ACS groups. We think that the finding that irritable temperamental features were more prominent in the NCA patients will provide a basis for further investigations directed to diagnosis and treatment of NCA by contributing to the description of the psychological profile of these patients.

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