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ARAŞTIRMA/RESEARCH

Type D personality in patients with tension-type headache: relationships with clinical features and quality of life

Gerilim tipi başağrısı olan hastalarda D tipi kişilik: klinik özellikler ve yaşam kalitesi ile ilişkileri

Seden Demirci[1], Semih Gürler[2], Kadir Demirci[3]

[1]Süleyman Demirel University, Faculty of Medicine, Dept. of Neurology, [3]Dept. of Psychiatry, Isparta, Turkey
[2]Isparta State Hospital, Isparta, Turkey

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Abstract

Purpose: The aim of this study was to investigate the associations between Type D personality and clinical features and quality of life in patients with tension-type headache (TTH).

Material and Methods: Eighty-three patients with TTH were enrolled in this study. Headache characteristics of the patients were recorded and the severity of headache was evaluated by Visual Analogue Scale (VAS). Type D personality was assessed using Type D Scale and quality of life was assessed using 36-Item Short-Form Health Survey (SF-36).

Results: We found that physical and mental subscales of SF-36 scores were significantly lower in TTH patients with type D personality than those without type D personality. The scores of total Type D Scale were found to be positively correlated with headache frequency and negatively correlated with the scores of physical and mental subscales of SF-36). In multivariate linear regression analysis total score of the type D scale was found to be independently associated with the physical and mental subscale of the SF-36 and headache frequency.

Conclusion: Type D personality traits may lead to an increase in headache frequency and decrease in quality of life in patients with TTH. Therefore, early recognition of type D personality and providing psychological support may contribute to better quality of life in patients with TTH.

Key words: Tension-type headache; Type D personality; headache characteristics; quality of life

Öz

Amaç: Bu çalışmanın amacı, gerilim tipi başağrısı (GTBA) olan hastalarda, D tipi kişilik ile klinik özellikler ve yaşam kalitesi arasındaki ilişkinin incelenmesidir.

Gereç ve Yöntem: Çalışmaya GTBA tanısı konmuş 83 hasta dahil edildi. Hastaların başağrısı özellikleri kaydedildi ve başağrısı şiddeti Görsel Analog Skala ile değerlendirildi. D tipi kişilik D tipi Kişilik Ölçeği ile değerlendirildi. Yaşam kalitesi ise Kısa Form-36 (SF-36) Yaşam Kalitesi Ölçeği ile değerlendirildi.

Bulgular: D tipi kişiliği olan GTBA hastalarında SF-36 fiziksel ve mental bölümü skorları D tipi kişiliği olmayanlara göre istatistiksel olarak anlamlı düzeyde düşük saptandı. Toplam D tipi kişilik Ölçeği puanı ile başağrısı sıklığı arasında anlamlı pozitif ve SF-36 fiziksel ve mental bölümü puanları arasında anlamlı negatif ilişki bulundu. Çok değişkenli lineer regresyon analizinde D tipi kişiliğin SF-36 fiziksel ve mental bölümleriyle ile başağrısı sıklığı üzerine bağımsız etkisi olduğu saptandı.

Sonuç: D tipi kişilik özellikleri GTBA hastalarında başağrısı sıklığında artışa ve yaşam kalitesinde azalmaya yol açabilir. Bu nedenle, GTBA hastalarında D tipi kişiliğin erken tanınması ve psikolojik destek sağlanması daha iyi yaşam kalitesine katkı sağlayabilir.

Anahtar kelimeler: Gerilim tipi başağrısı; D tipi kişilik; başağrısı özellikleri; yaşam kalitesi

Yazışma Adresi/Address for Correspondence: Dr. Seden Demirci, Süleyman Demirel University Faculty of Medicine, Department of Neurology, Isparta, Turkey E-mail: sdndemirci@yahoo.com.tr
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INTRODUCTION

Tension-type headache (TTH), the most frequent primary headache, constitutes almost 80% of all headache diagnoses. It causes an important socioeconomic cost and decreased quality of life[1]. The mean lifetime prevalence of TTH in adults has been reported to be 46%[2]. The exact cause of TTH is not clear. The pathophysiology of TTH has been suggested to be multifactorial, with the involvement of the central and peripheral nervous systems and of environmental factors[3]. Psychological stress is a largely defined contributing factor to TTH, but the mechanisms underlying the association are uncertain[1]. As stress has been indicated to have an effect on pain processing through the central nervous system, it has been suggested that stress worsens already higher pain sensitivity in patients with chronic TTH[1,4,5]. Psychiatric conditions, such as major depressive disorder, panic disorder, and generalized anxiety disorder, are common in patients with TTH[6]. It has also been reported certain personality traits particularly neuroticism in patients with TTH, showing that these personality traits contribute to the development of headaches through elevating the vulnerability of an individual to suffer headaches[7]. Psychiatric comorbidity complicates the disease management and causes poor prognosis in patients TTH[8]. It is thus considerable to assess the psychological status of TTH sufferers.

Type D (distressed) personality has been characterized as the tendency to uncover the conjoint presence of two stable personalities as social inhibition (SI) and negative affectivity (NA). People with high scores on SI tend to experience inhibited, stressful and insecure in social contacts with other people[9]. NA is the tendency to feel negative emotions in the face of situations and time, while SI is the tendency to the inhibited expression of behaviors/emotions in social interactions on account of fear of rejection and disapproval by other individuals. People with high scores on NA often report feelings of dysphoria, depression, anxiety, tension, irritability, worry, and unhappiness. That is to say, the type D personality is a pessimistic, anxious, and socially incompetent worrier. This personality trait is linked to biological and behavioral mechanisms which may affect health, such as physiological hyperreactivity, immune activation and worse health-related behaviors[10,11]. Invividuals with type D personality have elevated risk for emerging the psychiatric and medical conditions[12,13]. Recently, several studies suggested that Type D personality was linked to adverse clinical outcomes and quality of life[14,15]. However, to the best of our knowledge, the relationship between TTH and type D personality has not been analyzed yet. Thus, the aim of this study was for the first time to investigate the relationships of Type D personality with clinical features and quality of life in patients with TTH.

MATERIAL AND METHODS

Participants

Eighty-three patients with TTH who applied to neurology outpatient clinic of the Research and Training Hospital of Süleyman Demirel University and Isparta State Hospital were enrolled in this study. The diagnoses of headache were made according to the IHS (Internatonal Headaches Society, 2004) criteria[16]. Patients with the age of 18-45 years old, with at least basic school education and a diagnosis of episodic or chronic TTH for at least 1 year were included. Patients with known chronic diseases or neurological diseases other than TTH, psychiatric conditions, concurrent medical disorders including cardiac, blood, renal, hepatic or circulatory disorders, substance and alcohol dependence, and inability or reluctance to cooperate were excluded from the study.

A detailed medical history was obtained from the patients. Complete neurologic examination was performed for all patients by the neurologist. The age, sex, education, marital status, employment status, duration of the disease, frequency and duration of headache attack were recorded.

The severity of headache was assessed by Visual Analogue Scale (VAS) which is an instrument frequently used to evaluate the pain level which a patient felt. VAS is a horizontal line including a number from 0 describing no pain to 10 describing the worst pain possible. Psychiatric interview was performed to all patients by the same psychiatrist via Structured Clinical Interview for Diagnostic and Statistical Manual Of Mental Disorder, Fourth Edition, Axis I Disorders (SCID-I). As a result of this interview, the patients with psychiatric disorders were also excluded from the study. All patients were asked to fill the 14-Item Type D Scale (DS-14) and 36-Item Short-Form Health Survey (SF-36) in a quiet room. Written informed consent was obtained

from all patients according to the ethical principles of the Declaration of Helsinki. The study was approved by the local ethics committee.

Self-reported measurements

Type D personality was evaluated by the Turkish validated Type D Scale. The scale includes two subscales as SI and NA. Each subscale comprises 7 items answered on a 5-point response scale ranging from 0 (false) to 4 (true). Equal and above 10 points on both the SI and NA subscales is used to define subjects as having a Type D personality (SI≥10 and NA≥10)[17].

The SF-36 was used to evaluate the general quality of life. It assesses eight dimensions of physical and mental health over the previous 4 weeks. These are associated with physical role, physical functioning, general health, bodily pain, social functioning, vitality, mental health and emotional role. Each domain has a score ranging from 0 to 100 with higher scores denoting better quality of life. The validity and reliability of the Turkish version of SF-36 was conducted by Kocyigit et al.[18].

Statistical analysis

Statistical analysis was performed by SPSS software (version 15 SPSS; Chicago, IL, USA). The Kolmogorov-Smirnov test was used for evaluating the normality of distribution of all continuous variables. Descriptive statistics were presented as mean ± standard deviation. In order to compare categorical variables given as the number of cases and percentages a chi-square test was use. Student's t test and the Mann-Whitney U test were performed for parametric and non-parametric data respectively.

The Pearson's and Spearman's correlation tests were performed for analysis of correlations between the variables. Multivariate linear regression analysis was carried out for clarifying the association between the DS-14 and headache frequency, SF-36. P-value < 0.05 was taken as statistically significant.

RESULTS

Eighty-three patients with TTH (67 females and 16 males) were included in the study. The mean age was 28.5±9.38 years in the patients with TTH. The demographic and clinical data of the patients were shown in Table 1. 39 (47%) patients with TTH had type D personality. TTH patients with type D personality were not significantly different regarding age, gender, marital status, and education than those without type D personality ($p>0.05$ for all). Duration of disease, frequency headache, and the level of VAS were higher in TTH patients with type D personality than those without type D personality but this significance were not statistically significant. Physical and mental components of SF-36 scores were significantly lower in TTH patients with type D personality than those without type D personality ($p=0.01$, $p<0.001$, respectively).

The NA scores were found to be positively correlated with the headache frequency ($r=0.218$, $p=0.048$) and negatively correlated with the scores of physical ($r=-0.419$, $p<0.001$) and mental components of SF-36 ($r=-0.537$, $p<0.001$). The SI scores were negatively correlated with the scores of physical and mental components of SF-36 ($p=0.004$, $p=0.040$, respectively). The total scores of DS-14 were positively correlated with headache frequency ($r=0.235$, $p=0.032$) and negatively correlated with the scores of physical ($r=-0.425$, $p<0.001$) and mental components of SF-36 ($r=-0.462$, $p<0.001$). Correlations between the scores of type D personality and headache features and quality of life parameters in TTH patients were shown in Table 2.

Multivariate linear regression analysis was performed to evaluate the relationship between the DS-14 and headache frequency, SF-36. For evaluation of the effect of type D personality on quality of life, mental and physical components of the SF-36 were taken as dependent and gender, age, disease duration, headache duration and frequency, VAS, and total score of the DS-14 were taken as independent variables in TTH patients. Multivariate linear regression analysis showed that total score of the DS-14 was independently associated with the mental and physical components of the SF-36 even after adjustment for confounding background variables ($p<0.001$, $p<0.001$, respectively). These results were presented in Table 3.

When it comes to the effect of type D personality on the frequency of headache; the frequency of headache was taken as dependent and gender, age, and total score of the DS-14 were taken as independent variables in TTH patients. Multivariate linear regression analysis demonstrated that total score of the DS-14 was independently associated with the frequency of headache even after adjustment for age and gender ($p=0.03$, $\beta=0.235$, $t=2.180$, adjusted $R^2=0.04$).

Table 1. Demographic and clinical characteristics of patients with TTH

	All patients with TTH (n=83)	Patients with type D personality (n=39)	Patients without type D personality (n=44)	*p*
Age (year)	28.5±9.38	29.5±10.5	27.5±8.17	0.63
Sex (female/male)	67/16	32/7	35/9	0.48
Marital status				0.10
Single, n (%)	50	19	31	
Married, n (%)	26	15	11	
Divorced, n (%)	7	5	2	
Education (year)	12.2±3.02	11.7±3.15	12.6±2.87	
Disease duration (year)	4.80±4.09	5.02±4.21	4.61±4.01	0.35
Headache frequency (n/month)	9.38±7.78	11.2±9.24	7.70±5.82	0.17
Headache duration(h)	12.2±10.4	12.3±8.50	12.2±11.9	0.45
VAS	6.02±1.37	6.12±1.19	5.93±1.53	0.52
NA	14.3±6.73	18.4±4.80	10.6±6.04	<0.001
SI	10.8±5.72	15.5±4.07	6.63±3.03	<0.001
DS-14 total	25.2±11.0	34.3±7.67	17.2±6.39	<0.001
SF-36 Physical	44.7±8.02	42.3±7.73	46.8±7.76	0.01
SF-36 Mental	40.4±10.2	36.5±10.7	43.7±8.59	0.001

P value shows statistically significance between patients with type D personality and those without type D personality.; TTH: Tension-type headache, VAS: Visual Analogue Scale, NA: Negative affectivity, SI: Social inhibition, DS-14: 14-item Type D Scale, SF-36: 36-Item Short-Form Health Survey

Table 2. Correlations between the scores of NA, SI, and total DS-14 and clinical and quality of life parameters in patients with TTH (n=83)

	NA		SI		Total	
	r	p	r	p	r	p
Disease duration (year)	0.55	0.622	0.146	0.188	0.101	0.363
Headache frequency (n/month)	0.218	0.048	0.201	0.068	0.235	0.032
Headache duration (h)	0.076	0.492	0.153	0.167	0.126	0.255
VAS	0.205	0.063	0.058	0.605	0.160	0.176
SF-36 Physical	-0.419	<0.001	-0.314	0.004	-0.425	<0.001
SF-36 Mental	-0.537	<0.001	-0.227	0.040	-0.462	<0.001

r: Pearson and spearman's correlation coefficient ; TTH: Tension-type headache, VAS: Visual Analogue Scale, NA: Negative affectivity, SI: Social inhibition, DS-14: 14-item Type D Scale, SF-36: 36-Item Short-Form Health Survey

DISCUSSION

We found that the patients with TTH having type D personality had significantly lower scores of physical and mental components of the SF-36 compared with those without type D personality. Type D personality was positively correlated with headache duration and negatively correlated with quality of life. Furthermore, in multivariate linear regression analysis Type D personality was independently associated with the frequency of headache and quality of life. To the best of our knowledge, this is the first study that shows the relationship of type D personality with the headache frequency and quality of life in TTH patients.

Patients with TTH have high frequency of psychiatric comorbidities such as anxiety, neuroticism, or depression. These patients are more vulnerable to stress than general population[19]. A study was demonstrated that the patients with TTH had an important reduction of anger control, an elevated level of anxiety, depression, the symptoms of phobias and obsessive-compulsive disorder, emotional lability, and psychophysiological disorders and also was suggested a link between anger and the headache duration[20]. Negative effects such as depression, anxiety, and hostility were reported to be connected and elevated worry in patients with chronic TTH than controls in another study[21]. Yücel et al. assessed assertiveness, alexithymia, and

depressive automatic thoughts in TTH sufferers and in healthy subjects. The scores of depression, automatic thoughts, and alexithymia were significantly higher; the scores of assertiveness were significantly lower in the patients with TTH compared with the healthy subjects[22]. A study investigating the personality traits and coping strategies in female TTH sufferers showed that headache patients had higher scores of anxiety, depression, and neuroticism and also lower scores of active coping subscale than healthy controls, showing maladaptive coping skills. The researchers suggested that these ineffective responses to stressful events might contribute to the development of TTH[23]. Aaset et al. found significantly higher neuroticism and psychological distress by Eysenck Personality Questionnaire and Hopkins Symptom Checklist-25 in TTH sufferers than the general population[24]. Moreover, Rasmussen reported that individuals with TTH had higher level of neuroticism compared with those with migraine[25]. Chen et al. analyzed the personality traits using five-factor personality model in the male patients with TTH and stated that the scores of neuroticism and anxiety were increased in these patients[26]. A study investigating the temperament and character traits of patients with TTH showed that TTH patients had increased harm avoidance score compared to the healthy subjects[27]. Moreover, Boz et al. found elevated levels of harm avoidance and decreased levels of self-directedness scores using Temperament and Character Inventory in patients with chronic TTH than controls; after serotonergic antidepressant treatment harm avoidance scores reduced and self-directedness scores increased in headache patients[7].

Table 3. The results of regression analyses for predictability of quality of life

Variables	Standardized Coefficients (Beta)	t	p	Adjusted R^2
SF-36 Physical				0.171
Age (year)	-0.168	-1.665	0.100	
Sex	0.223	2.264	0.026	
Disease duration (year)	0.003	0.031	0.975	
Headache frequency (n/month)	-0.272	-2.719	0.008	
Headache duration (h)	-0.155	-1.547	0.126	
VAS	-0.154	-1.518	0.133	
DS-14	-0.425	-4.204	<0.001	
SF-36 Mental				0.462
Age (year)	0.071	0.704	0.483	
Sex	-0.082	-0.822	0.414	
Disease duration (year)	0.083	0.835	0.406	
Headache frequency (n/month)	-0.280	-2.870	0.005	
Headache duration (h)	-0.059	-0.588	0.558	
VAS	-0.191	-1.934	0.057	
DS-14	-0.462	-4.658	<0.001	

In our study, duration of disease, frequency of headache, and the level of headache severity were higher in TTH patients with type D personality than those without type D personality. But these differences were not statistically significant. This might be owing to the small sample size. The frequency of headache was positively correlated with the NA and total DS-14 scores. Moreover, total DS-14 scores were independently associated with the frequency of headache. Our findings suggest that the individuals with distressed personality traits may have worse headache characteristics. Stress and pain share common mechanisms such as neural, behavioral, endocrine, and autonomic[1]. Although it has been reported that several factors may trigger TTH, stress is the most frequent trigger of headache[1,28]. The personality traits of a subject might also participate in the pain responses in TTH. It was reported that neurotic triad (hypochondria, hysteria and depression) might contribute the development of headaches through leading to individuals more susceptible to headaches[27]. However, it is not still exactly known whether or not this certain personality traits are the causes or

consequences of TTH[24].

Most of the TTT sufferers have mild to severe disability on the functions of daily living activities and poor quality of life[29]. Recognition of the factors involved in the quality of life might provide helps to improve the diagnostic and intervention strategies in patients with TTH. Patients with type D personality were reported to have worse health status than non-type D patients in various medical conditions[14,15]. In this study, we found that patients with type D personality had poor quality of life as compared to those without type D personality. The NA, SI, and total DS-14 scores were negatively correlated with the mental and physical components of the SF-36. Furthermore, as a result of regression analysis this personality trait was independently predictor of the quality of life in TTH patients. Our findings may show the importance of the evaluating the type D personality for preventing its negative results on quality of life in the patients with TTH. Patients with type D personality may not manage the stressful life events sufficiently[30]. Besides, Williams et al. declared that type D personality was linked to health-related behaviors and perceived social support[31]. People with type D personality may not express their emotions adequately due to the type D personality traits as NA and SI. Despite of the fact that type D is characterized by stable traits, this may not mean that individuals' distress level might not be modified. Therefore, these individuals may benefit by psychological and/or pharmacological treatment aimed to reduce the stress and to ameliorate the disease management skills[13]. These interventions may also increase the quality of life in TTH patients having type D personality.

There are several limitations in our study need to be discussed. The cross-sectional nature is one of the limitations of this study. This study analyzed the small sample size. Another possible limitation of our study is the absence of a healthy control group. The evaluation of quality of life and type D personality were based on self-reporting questionnaire. Nevertheless, in spite of these limitations, for the first time our study showed the associations of type D personality with headache characteristics and quality of life in patients with TTH.

As a result, this study suggests that type D personality traits might lead to increase in the frequency of headache and decrease in the quality of life in patients with TTH. For this reason, it may be important to assess type D personality traits in patients with TTH in neurological practice. Early recognition of type D personality might result in better quality of life for these patients and might help to cope with TTH thanks to providing early psychological support. Our study may also shed light on future studies with longer follow-up periods to explain the relationships precisely and to analyze the effects of psychological interventions on type D personality in patients with TTH.

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