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Evaluation of anxiety sensitivity, depression, and personality characteristics in chronic subjective dizziness patients

Kronik subjektif dizziness hastalarında anksiyete duyarlılığı, depresyon ve kişilik özelliklerinin değerlendirilmesi

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Abstract

Aim: Dizziness and vertigo are among the most common symptoms in otolaryngology, neurology and psychiatry clinics. In this study, it was aimed to evaluate anxiety sensitivity, depression and personality traits in patients who were followed up with chronic subjective dizziness.

Methods: Fifty-one patients with dizziness complaints for at least 3 months and no history of peripheral vestibular disease were enrolled to the patient group, and 51 healthy controls were enrolled to the control group of this case-control study. Anxiety Sensitivity Index-3 (ASI-3), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI) and Eysenck Personality Questionnaire (EPQ) scale forms were applied to the patient and control groups by a psychiatrist.

Results: There was no statistically significant difference in ASI-3 between the groups (P=0.119). In the patient group, the BAI values were found higher than the control group (P<0.001). While BDI values between the patient and control groups were similar, there was a trend for higher depression scores in the patients compared with the healthy individuals (P=0.052).

Conclusion: As a result, the presence of anxiety symptoms and neurotic personality characteristics may worsen dizziness development or disease progression. In the treatment of dizziness patients without neurological and otologic problems, a multidisciplinary approach will provide positive contributions to the course of the disease and to the quality of life of the patients.

Keywords: Dizziness, Anxiety sensitivity, Personality traits, Depression

Öz

Amaç: Dizziness ve vertigo otolaringoloji, nöroloji ve psikiyatri kliniklerinde en sık görülen semptomlar arasındadır. Bu çalışmada kronik subjektif dizziness hastalarında anksiyete duyarlılığı, depresyon ve kişilik özelliklerinin değerlendirilmesi amaçlanmıştır.

Yöntemler: Periferik vestibüler hastalık hikayesi olmayan en az 3 aydır süren subjektif dizziness şikayeti olan 51 hasta ile 51 sağlıklı gönüllü çalışmaya dahil edildi. Anksiyete Duyarlılığı İndeksi-3 (ASI-3), Beck Anksiyete Ölçeği (BAI), Beck Depresyon Ölçeği (BDI) ve Eysenk Kişilik Envanteri (EPQ) psikiyatri uzmanı tarafından hasta ve kontrol grubuna uygulandı.

Bulgular: Gruplar arasında anksiyete duyarlılık indeksi-3 ölçeğinde anlamlı farklılık bulunmadı (P=0.119). Hasta grubunda BAI değerleri kontrol grubuna göre istatiksel olarak anlamlı yüksekti (P<0.001). BDI değerleri hasta grubunda kontrol grubuna göre daha yüksek olmasına rağmen aradaki fark istatiksel olarak anlamlı değildi (P=0.052).

Sonuç: Sonuç olarak anksiyete semptomu ve nevrotik kişilik özelliklerinin varlığı dizziness gelişimini ya da hastalığın seyrini kötüleştirebilir. Nörolojik ve otolojik problemi olmayan dizziness hastalarının tedavisinde multidisipliner yaklaşım hastalığın seyri ve hastaların yaşam kalitesi üzerine olumlu katkılar sağlayacaktır.

Anahtar kelimeler: Dizziness, Anksiyete duyarlılığı, Kişilik özellikleri, Depresyon

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Introduction

Dizziness and vertigo are among the most common symptoms in otolaryngology, neurology, and psychiatry clinics, which affect the daily activities of patients and decrease their quality of life. Chronic subjective dizziness (CSD) can be defined as chronic non-vertiginous dizziness syndrome or unsteadiness that is present throughout the day for 3 months or more [1]. Patients complain of dizziness when they are standing and vertigo when they walk. Patients' complaints increase at shopping centers where they are exposed to visual stimuli, while looking at the computer screen or reading books [2]. Patients' own movements and visual environmental stimuli usually activate dizziness.

Dizziness is the general name of the sense of disorientation. Vertigo is the subgroup of dizziness, which can be expressed as a misperception of the movement itself or object, which is the incompatibility between vestibular, visual, and somatosensory systems. Dizziness is often called non vertiginous imbalance [3]. Prospective studies have also reported that acute anxiety and hypervigilance lead to persistent dizziness [4].

Anxiety sensitivity is a fundamental fear that persists in the character of a person. People with elevated levels of anxiety sensitivity are immediately alerted to their fears when they experience anxiety, which in turn exacerbates their anxiety [5]. Some authors describe anxiety sensitivity as a “fear of fear” or “fear of anxiety” [6]. It has been stated that people with high anxiety may have low anxiety sensitivity or vice versa [7]. The view that anxiety sensitivity is different from anxiety is more consistent and matches with personal observations.

In approximately 30–50% of patients with vertigo/dizziness, complaints are not fully explained by a vestibular deficit or a defined organic illness, but instead are related to psychiatric disorders [8]. In a study of 189 patients with dizziness who had anxiety disorder in terms of psychiatric subgroups, they found anxiety and phobic disorder in 56 patients, somatoform disorder in 53 patients and depressive disorder in 20 patients [9].

Anxiety was investigated in normal subjects with postural control, along with those with anxiety disorder and vestibular disorder. Patient with anxiety disorder have more balance disorders than normal individuals. It has been reported that balance disorders are improved when anxiety disorders of these patients are treated [10].

While assessing the personality traits, different measurement scales can be used, such as Temperament and Character Scale (TCS), which is another scale for measuring personality traits that was used by Akçay et al. [11] in one of their studies. We used the Eysenck Personality Questionnaire (EPQ) for this study, and aimed to evaluate anxiety sensitivity, depression symptoms and accompanying personality factors in patients with complaints of dizziness lasting for at least 3 months.

Materials and methods

Fifty-one patients with dizziness complaints lasting for at least 3 months and 51 healthy volunteers aged between 18-65 years were included in this study between April-December 2017. It was conducted at department of otolaryngology. Informed consents were obtained from all participants. Patients with systemic diseases such as hearing loss, tinnitus, diabetes mellitus, hypertension, coronary heart disease in addition to dizziness complaint, and those who had previously experienced head and ear trauma, ear surgery, those with peripheral vestibular disease history, alcohol consumers and smokers were not included in the study. A complete head and neck examination was performed in all participants. Audiometry, tympanometry, acoustic reflex, spontaneous nystagmus and Dix Hallpike tests and ear Magnetic Resonance Imaging (MRI) results were normal in both the patient and control groups. Anxiety Sensitivity Index-3 (ASI-3), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI) and EPQ scale forms were applied to the patient and control groups by a psychiatrist.

Anxiety Sensitivity Index-3 (ASI-3)

This a self-assessment scale used to measure anxiety sensitivity with its physical, social, and cognitive aspects. It is easily applicable, short, and understandable. Subjects may fill it out themselves. A five-point Likert type (0=very small, 4=very large) scale is used for 18 items. The total score of the scale is the sum of the scores of each item. High scores indicate increased anxiety sensitivity and Turkish form has no cut-off score. ASI-3 showed a high internal consistency, Cronbach's alpha coefficient was calculated as 0.930, and test-retest reliability was found to be very good (r=0.64, $P<0.001$). Taylor et al. [12] developed the test, after which Mantar et al. [13] adapted it for Turkey.

Eysenck Personality Questionnaire

Francis et al. [14-16] reviewed the EPQ and the short form (48 items) of same questionnaire and created the reviewed short form, which consists of 24 items and assesses personality in 3 main factors: extroversion, neuroticism, psychoticism. In this questionnaire where each factor is evaluated with 6 items, participants are asked to answer Yes (1) - No (0) to 24 questions. Points for each personality attribute range from 0 to 6. Turkish validity and reliability study was performed by Karancı et al. [17].

Beck Depression Inventory

It was developed by Beck et al. [18] to assess somatic, emotional, cognitive, and motivational symptoms seen in depression. The BDI is a scale consisting of 21 self-assessment sentences and each symptom category has four options. Each item is scored between 0-3 points, and the total score ranges between 0-63. Turkish validity and reliability studies were conducted [19], for which the cut-off point was determined as 17.

Beck Anxiety Inventory

It was developed by Beck et al. [20] to measure the prevalence of anxiety symptoms experienced by the individual. BAI, based on self-reporting, consists of 21 items. Each item is scored between 0 and 3 and the total score ranges from 0 to 63. The high scores on the scale indicate the severity of the anxiety experienced by the individual. Turkish validity and reliability study was conducted by Ulusoy et al. [21].

Statistical analysis

Data analysis was performed using the IBM SPSS statistics 22.0 software (IBM Corp., Armonk, NY). Descriptive

statistics methods were used to evaluate frequency, percentage, mean, standard deviation, median, quaternary separation. Chi-square (χ^2) test was used to evaluate qualitative data. The conformity of data to normal distribution was evaluated by Kolmogorov-Smirnov and Shapiro-Wilk tests. Independent Samples t-test and Mann-Whitney U tests were used for continuous normally distributed data and non-normally distributed data, respectively. Spearman Rho correlation test was utilized to evaluate interrelationships between variables. *P*-values <0.05 are considered significant.

Power analysis was conducted with G*Power 3.1.9.2 software. The power of this data was calculated as 1-β=0.99 with n1=51, n2=51, α=0.05 and an effect size of d=1.0.

Results

Fifty-one patients with dizziness and 51 healthy individuals were included in this study as the patient and control groups, respectively. The number of females and males in the control and study groups were 33 (64.7%), 18 (35.2%) and 37 (72.5%), 14 (27.5%), respectively, with a significant dominance of females in both groups (*P*=0.009). Groups were similar in terms of age (*P*=0.258) and ASI-3 (*P*=0.119) scores. Mean BAI scores (68.6%) were higher in the patient group (*P*<0.001) (Figure 1). There was a trend for higher BDI values in the patient group compared to the control group (*P*=0.052). There was no statistically significant difference in EPQ neuroticism, extraversion and psychoticism between the patient and control groups (*P*=0.334, *P*=0.789, *P*=0.116 respectively) (Table 1).

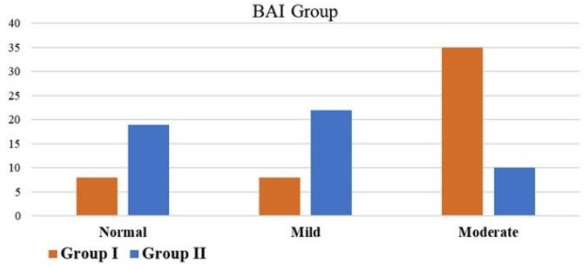

Figure 1: Comparison of Beck Anxiety Index between groups (Group I: Patients, Group II: Control)

Table 1: Sociodemographic data and scale results in patient and control group

		Patient (n=51)	Control (n=51)	*P*-value
Gender	Female	37 (72.5%)	33 (64.7%)	0.009 [a]
	Male	14 (27.5%)	18 (35.2%)	
Age (Year)		45.1(13.3)	42.3(11.1)	0.258 [b]
ASI-3		22 (16 - 39)	17 (10 - 34)	0.119 [c]
BAI		23 (12 - 32)	10 (5 - 14)	0.000 [c]
BAI Group	Normal	8 (15.7%)	19 (37.3%)	0.000 [a]
	Mild	8 (15.7%)	22 (43.1%)	
	Moderate	35 (68.6%)	10 (19.6%)	
BDI		14 (7 - 21)	9 (4 - 14)	0.052 [c]
BDI Group	Normal	19 (37.3%)	29 (56.9%)	0.070 [a]
	Mild	18 (35.3%)	15 (29.4%)	
	Moderate	11 (21.6%)	3 (5.9%)	
	Severe	3 (5.9%)	4 (7.8%)	
EPQ	Neuroticism	4 (2 - 5)	3 (2 - 5)	0.334 [c]
	Extraversion	4 (2 - 5)	4 (2 - 5)	0.789 [c]
	Psychoticism	2 (1 - 3)	1 (1 - 2)	0.116 [c]

Mean (SD), EPQ: Eysenck Personality Questionnaire, BDI: Beck Depression Inventory, ASI-3: Anxiety Sensitivity Index-3, BAI: Beck Anxiety Inventory, [a]: Chi-Square Test (n/%), [b]: Independent Samples T Test, [c]: Mann-Whitney U Test [Median (Interquartile Range)]

When the patient group was evaluated among itself, a positive correlation was detected between the female gender and ASI-3(*P*=0.006, r=-0.379), BAI (*P*=0.005, r=-0.391), BDI (*P*=0.001, r=-0.468) scores, and neuroticism (*P*=0.008, r=-0.366). ASI-3 and BAI (*P*<0.001, r=0.665), BDI (*P*<0.001 r=0.607), neuroticism (*P*<0.001 r=0.506) were also found to positively correlate, along with BAI, BDI (*P*<0.001 r=0.679), and neuroticism (*P*<0.001, r=0.600). BDI and neuroticism were positively correlated as well (*P*<0.001, r=0.674).

When the control group was evaluated among itself, a positive correlation was detected between the female gender and neuroticism (*P*=0.005, r=-0.388). ASI-3 and BAI (*P*<0.001, r=0.545), BDI (*P*=0.001, r=0.438), neuroticism (*P*=0.029, r=0.306) were also found to positively correlate, along with BAI, BDI (*P*=0.001, r=0.467), neuroticism (*P*<0.001, r=0.637), and extraversion (*P*=0.006, r=-0.378). BDI was found to positively correlate with neuroticism (*P*=0.003, r=0.413) and psychoticism (*P*=0.027, r=0.309), while neuroticism negatively correlated with extraversion (*P*=0.006, r=-0.381) (Table 2).

Table 2: Relations between variables according to groups

		Gender	Age	Anxiety Index-3	Sensitivity	Beck Anxiety Inventory	Beck Depression Inventory	EPQ Neuroticism	EPQ Extraversion	EPQ Psychoticism
Patient Group										
Gender	r	1.000								
	P-value	.								
Age (Year)	R	-0.158	1.000							
	P-value	0.267	.							
Anxiety Sensitivity Index-3 (ASI-3)	R	-0.379	0.161	1.000						
	P-value	0.006	0.258	.						
Beck Anxiety Inventory (BAI)	r	-0.391	0.213	0.665		1.000				
	P-value	0.005	0.134	0.000		.				
Beck Depression Inventory (BDI)	R	-0.468	0.299	0.607		0.679	1.000			
	P-value	0.001	0.033	0.000		0.000	.			
EPQ Neuroticism	R	-0.366	-0.005	0.506		0.600	0.674	1.000		
	P-value	0.008	0.974	0.000		0.000	0.000	.		
EPQ Extraversion	R	0.164	-0.110	-0.087		-0.147	-0.240	-0.219	1.000	
	P-value	0.251	0.442	0.543		0.304	0.089	0.123	.	
EPQ Psychoticism	R	0.122	-0.106	-0.042		0.004	0.091	0.006	0.096	1.000
	P-value	0.395	0.461	0.768		0.980	0.525	0.965	0.504	.
Control Group										
Gender	R	1.000								
	P-value	.								
Age (Year)	R	-0.151	1.000							
	P-value	0.289	.							
Anxiety Sensitivity Index-3 (ASI-3)	R	-0.048	0.155	1.000						
	P-value	0.737	0.279	.						
Beck Anxiety Inventory (BAI)	R	-0.142	0.081	0.545		1.000				
	P-value	0.320	0.570	0.000		.				
Beck Depression Inventory (BDI)	R	-0.233	-0.012	0.438		0.467	1.000			
	P-value	0.099	0.932	0.001		0.001	.			
EPQ Neuroticism	R	-0.388	-0.116	0.306		0.637	0.413	1.000		
	P-value	0.005	0.416	0.029		0.000	0.003	.		
EPQ Extraversion	R	-0.112	-0.022	-0.074		-0.378	-0.065	-0.381	1.000	
	P-value	0.435	0.876	0.608		0.006	0.652	0.006	.	
EPQ Psychoticism	R	0.274	-0.127	0.050		0.129	0.309	-0.001	-0.057	1.000
	P-value	0.052	0.374	0.727		0.366	0.027	0.993	0.692	.

*: Spearman's Rho Correlations

Discussion

Symptoms of dizziness usually consist of nonspecific complaints. Otolaryngologists often direct their attention to inner ear pathologies, however, neurological, cardiological and psychiatric pathologies underlying dizziness should be taken into consideration for correct diagnosis and treatment. Dizziness can be seen at various ages from adolescents to elder adults. It is usually seen between the ages of 40-50 with most of the patients (60-70%) being females [22]. The mean age of the patients in our study was 45.1 (13.3) years. The greater number of women in our study can be explained by the fact that dizziness is more common in women than in men.

Although the relationship between visual, vestibular symptoms and anxiety has been studied recently, the relationship between anxiety and visio-vestibular system has been known for many years [23].

Anxiety's effect on postural control was investigated in normal subjects, and in those with anxiety and vestibular disorders. In patients with anxiety disorder, balance disorder is seen more than normal individuals. It has been reported that balance disorders are cured when anxiety disorders of these patients are treated [10].

Studies in vestibular and psychiatric patients have supported the relationship between balance control systems and anxiety [24]. In addition, patients with vestibular dysfunction are more susceptible to anxiety development than patients without vestibular dysfunction [25]. Patients with chronic dizziness also have higher anxiety levels than patients with other vestibular disorders [10].

In a study of the role of emotional disorders in the extent of dizziness, Roh et al. [26] found that chronic dizziness patients had higher anxiety depression levels and emotional distress and stated that emotional distress extends the duration of dizziness.

The long duration of dizziness complaints affects patients' daily physical activities, work life and quality of life. Dizziness may cause anxiety development or anxiety can cause extension of dizziness. Dizziness, vertigo, and imbalance are also complaints that can be seen in anxiety disorders. One of the main symptoms of panic attacks is dizziness. Therefore, in recent years, the relationship between vestibular functions and anxiety and the psychological factors that cause CSD to appear and continue have been studied [27]. In a study of 105 patients with dizziness diagnosis, Odman et al. [28] found that 79.3% of the patients also had anxiety and/or depression.

Staab et al. [1] found that hospital anxiety depression scores were higher in the CSD group in their study evaluating anxiety and personality characteristics in 40 patients. A study in which Chiarella et al. [29] assessed personality factors in patients with CSD found that anxiety, neuroticism, and openness scores were higher in CSD patients.

In this study, BAI was found significantly higher in the patient group. BDI showed a trend for higher depression scores in patients compared with the healthy group.

Best et al. [25] reported that in a study of psychiatric morbidity and comorbidity in patients with vestibular disorders, these psychiatric disturbances were reactivated after the onset of vestibular symptoms in patients with depression and somatoform disorders. In addition, psychiatric evaluation was deemed necessary to maintain the treatment more effective in dizziness patients with known psychiatric disorders.

The combination of anxiety and dizziness is one of the areas of common interest of otolaryngology and psychiatry. Until recently, the nature of the relationship between these two conditions has not been fully elucidated. The findings of the multidisciplinary study of the otorhinolaryngology, neurology and psychiatry can solve the complexity of "dizziness-anxiety-personality traits" by providing a better understanding of the pathophysiology.

Limitations

The limitations of the study include the fact that the sample group was relatively small. The psychiatric evaluation was not made by face-to-face interviews with these patients, and no evaluation regarding treatment was made. There is a need for prospective studies involving treatment for a longer period with a broader sample group.

Conclusion

The presence of anxiety symptoms may play a role in worsening of the course of the disease in dizziness. Using a multidisciplinary approach in the treatment of dizziness patients without neurological and otologic problems, and the use of treatment options such as drugs or cognitive behavioral therapies in the treatment of psychiatric patients will contribute positively to the chronicity of the disease, hospitalizations and the quality of life of the patients.

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