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Is There a Relationship Between the Disease Duration of Migraine and Symptoms of Depression and Anxiety?

Migrenli Olma Süresi ile Depresyon ve Anksiyete Semptomları Arasında İlişki Var mı?

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ABSTRACT

INTRODUCTION: We aimed to investigate the relation between disease duration and severity of anxiety disorder and depression symptoms in migraine patients.

METHODS: Two-hundred ninety-one patients with a definitive diagnosis of migraine according to ICHD-3 beta and who did not receive any other treatment for prophylaxis for at least one month were included. Headache diaries, Beck anxiety, and Beck depression inventories were filled. Whether there is a linear relationship between disease duration of migraine and the scores of depression and anxiety inventories was investigated using appropriate statistical methods. The patients were divided into six groups according to their disease duration as follows: <2 years (Group A), >2-<5 years (Group B), >5-<10 years (Group C), >10-<15 years (Group D), >15-<20 years (Group E), and >20 years (Group F).

RESULTS: The mean age of the patients was 35.6±10.2 years, of which 93.1% were female (n=271), and the mean disease duration was 11.84±8.2 years. No significant difference was found between the groups regarding the mean scores of Beck depression and anxiety inventories (p>0.05). There was also no correlation between the duration of migraine and the scores of Beck depression (r(291)=0.007, p=0.970) and anxiety (r (291)=-0.033, p=0.573) inventories.

DISCUSSION AND CONCLUSION: No significant difference was determined between the severity of depression and anxiety symptoms in patients with a longer disease duration compared with those with shorter duration. The data we obtained may be related to the fact that the co-existence of migraine and the symptoms of depression and anxiety disorder is in the nature of the disease, independent of disease process.

Keywords: migraine, depression, anxiety, disease duration

ÖZ

GİRİŞ ve AMAÇ: Migrenlilerde hastalık süresi ile depresyon ve anksiyete semptom düzeylerinin arasındaki ilişkiyi araştırmak.

YÖNTEM ve GEREÇLER: Çalışmaya dahil edilen hastalar Uluslararası Başağrısı Derneği 2013 (ICHD-3 beta) kriterlerine göre kesin migren tanısı almış olan ve en az son bir aydır profilaksi amaçlı başka tedavi almayanlar arasından seçildi. Başağrısı günlükleri yanında Beck anksiyete ve Beck depresyon ölçekleri doldurduldu. Migren hastalık süresi ile depresyon ve anksiyete ölçeklerinin skorları arasında doğrusal bir ilişki olup olmadığı uygun istatistiksel yöntemler ile araştırıldı. Analizler için gruplardaki sayı dağılımları da gözönüne alınarak hastalar migren hastalık sürelerine göre altı gruba ayrıldılar: <2 yıl (Group A), >2-<5 yıl (Group B), >5-<10 yıl (Group C), >10-<15 yıl (Group D), >15-<20 yıl (Group E), and >20 yıl (Group F).

BULGULAR: Hastaların (n=291) %93,1'i kadın (n=271) olmak üzere ortalama yaşları 35,6+10,198 (17-56) yıl, ortalama hastalık süreleri 11,84+8,2 (1-33) yıl idi. Gruplar arasında Beck depresyon (Grup A: 30,40± 10,177; Grup B: 30,41 ± 11,846; Grup C: 29,04 ±9,922; Grup D: 31,78 ± 12,202; Grup E: 29,03±11,983; Grup F: 31,40±12,406) ve anksiyete ölçeklerinin (Grup A: 28,29±10,689; Grup B: 27,80±10,770; Grup C: 27,38 ±10,086; Grup D: 28,80 ± 11,786; Grup E: 26,31±10,777; Grup F: 27,37±10,097) ortalama skorları açısından anlamlı fark bulunmadı (p>0,05). Migren hastalık süresi ile Beck depresyon (r (291)=0,007, p=0,970) ve anksiyete (r (291)=-0,033, p=0,573) ölçeklerinin skorları arasında da ilişki gözlenmedi.

TARTIŞMA ve SONUÇ: Hastalık süresi daha uzun olanlar, daha kısa olanlarla karşılaştırıldığında depresyon ve anksiyete semptomlarının şiddeti arasında anlamlı fark bulunamadı. Elde ettiğimiz bu veriler, migren ile depresyon ve anksiyete semptomlarının birlikteliğinin hastalık sürecinden bağımsız olarak hastalığın doğasında yer almasıyla ilişkili olabilir.

Anahtar Kelimeler: migren, depresyon, anksiyete, hastalık süresi

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INTRODUCTION

Migraine is a paroxysmal disease characterized by moderate or severe, recurrent headache attacks and accompanying symptoms such as nausea, vomiting, photophobia, and phonophobia. It has a complex multifactorial pathophysiology, and the unpredictability of attacks in many patients creates difficulties in coping (1,2).

Migraine is common worldwide. According to the Global Burden of Disease study, it was reported that there are approximately 1.04 billion migraine sufferers, with an estimated global prevalence of 14.7%, making it the third most common disease worldwide (3,4,5). In a study with a large cohort performed in recent years, its incidence was reported to be 2.38% in the Turkish population (6).

In patients with a primary headache disorder, migraine is considered to be among the leading causes of disability that cause significant functional impairment, both physical and psychological (3,4). During migraine attacks, the deterioration of the functionality of the patient and the persistence of the attacks closely affect the social, psychological, and economic status of the individuals (7). On the other hand, it was reported that patients with migraine are more likely to develop depression, which is a mood disorder (8), and it was suggested that this comorbidity is related to the fact that they have common pathophysiological mechanisms (9).

Anxiety disorders and depression are frequent psychiatric disorders in the general population. Anxiety disorders are considered two different psychiatric syndromes characterized by a constant and excessive worry that is not appropriate for the main situation, and depression is characterized by a decrease in internal energy and motivation (2). However, the comorbidity of these two psychiatric conditions is also quite common (10).

Although it was reported that anxiety disorder and depression are the psychiatric comorbidities most associated with migraine, they affect the clinical course of migraine and its response to treatment. There are a limited number of studies examining the duration of migraine disease and the presence of depression and anxiety symptoms (2,7,11,12). We hypothesized that migraineurs with a longer disease duration should have higher depression and anxiety symptom scores compared to those with migraine for a shorter period. This study aimed to investigate whether the duration of the disease and the symptoms of depression and anxiety in patients with migraine were directly proportional.

MATERIALS AND METHODS

Selection of cases

The patients included in the study were selected among those who applied to the Sakarya Univercty Hospital Neurology Outpatient Clinic with headache between 2014 and 2017, who had a definite diagnosis of migraine in the last year, according to the current International Classification of Headache (ICHD)-3 beta (2013) criteria at the time of data collection, and those who did not receive any other prophylaxis treatment for at least the last month (13). The patients were re-evaluated according to the updated ICHD-3 (2018) diagnostic criteria, and the definitive migraine diagnoses were reviewed and included in the analyses (14).

Ethics Committee approval (dated: 04/04/2013- decision no:1) was obtained for this study, and written and verbal consent forms were obtained from all participants in accordance with the Declaration of Helsinki.

Technical information

After completing their neurological examinations, the patients completed the headache diary and the Beck anxiety and Beck depression inventory (BAI and BDI) voluntarily. BAI and BDI consist of 21 questions, and each question is scored between 0 and 3 according to its severity. According to the BAI, 8-15 points are considered as mild anxiety disorder symptoms, 16-25 points as moderate anxiety disorder symptoms, and 26-63 points as severe anxiety disorder symptoms. In the BDI, 10-16 points are considered as mild, 17-29 points as moderate, and 30-63 points as severe depression symptoms (15,16). Both inventories were adapted to Turkish, and their validity and reliability analyzes were performed (17,18). Patients with high depression and anxiety scores were consulted with the psychiatry department.

Considering the number distribution in the groups for the analysis, the patients were divided into four groups according to their migraine disease duration: Group A: < 2 years; Group B: >2 - <5 years; Group C: >5-<10 years; Group D: >10-<15 years; E group: >15-<20 years; Group F: >20 years.

It was investigated by appropriate statistical methods whether the scores of depression and anxiety inventory scores increased as the duration of migraine disease increased, and whether there was a linear relationship between them.

Statistics

SPSS "Statistical Program For Social Sciences" Windows version 22.0 package program was used for statistical analysis. The conformity of the data to the normal distribution was tested with the Shapiro-Wilk test. The Kruskal-Wallis H test was used for the non-normally distributed features. Relationships between numerical variables were tested with the Pearson correlation coefficient. As descriptive statistics, mean±standard deviation for numerical variables, number, and percentage values for categorical variables were presented. The statistical significance limit was considered as $p < 0.05$.

RESULTS

The mean age of the patients (n=291) was 35.6+10.198 years, of which 93.1% were female (n=271), and the mean disease duration was 11.84+8.2 years. Demographic and clinical data of the patients are summarized in Table 1. The rates of symptom levels (absent, mild, moderate, severe) according to the BDI and BAI results are schematized in Figure 1. The mean scores of the BDI and BAI of the patients grouped according to the disease duration of migraine are presented in Table 2 in detail. No significant difference was found between the groups regarding the mean scores of BDI and BAI (p=0.819 and p=0.888, respectively). No correlation was observed between the disease duration of migraine and the scores of BDI (r(291)=0.007, p=0.970) and BAI (r (291)=-0.033, p=0.573). It was observed that there was a significant and positive relationship between the scores of BDI and BAI (r(291)=0,769, p<0.001).

Table 1. Demographic and Clinical Data

	Patients with migraine (n=291)
Age (mean±SD)	35.6±10.198 (17-56) years
Gender (F:M)	271:20
Age of disease onset (mean±SD)	23.8+5.778
Disease (being with migraine) duration (mean±SD)	11.8±8.2 (1-36) years
Number of painful days per month (mean±SD)	14.3±6.415 (6-27)
Number of attacks per month (mean±SD)	4.3± 1.969 (2-10)

SD: Standard deviation

Table 2. Beck Depression and Beck Anxiety Inventory Scores of the Groups According to the Disease Duration

Duration of being with migraine	**Number of patients with migraine (n=291)**	**Beck Depression Inventory (mean score)**	**P[a]**	**Beck Anxiety Inventory (mean score)**	**P[a]**
Group A (≤2 years)	14.4% (n=42)	30.40 ± 10.177		28.29± 10.689	
Group B (>2-≤5 years)	15.8% (n=46)	30.41 ± 11.846		27.80 ± 10.770	
Group C (>5-≤10 years)	18.9% (n=55)	29.04 ± 9.922	0.819	27.38 ± 10.086	0.888
Group D (>10-≤15 years)	15.8% (n=46)	31.78 ± 12.202		28.80 ± 11.786	
Group E (>15-≤20 years)	20.3% (n=59)	29.03±11.983		26.31±10.777	
Group F (>20 years)	14.8% (n=43)	31.40±12.406		27.37±10.097	

a: Kruskal-Wallis H test,

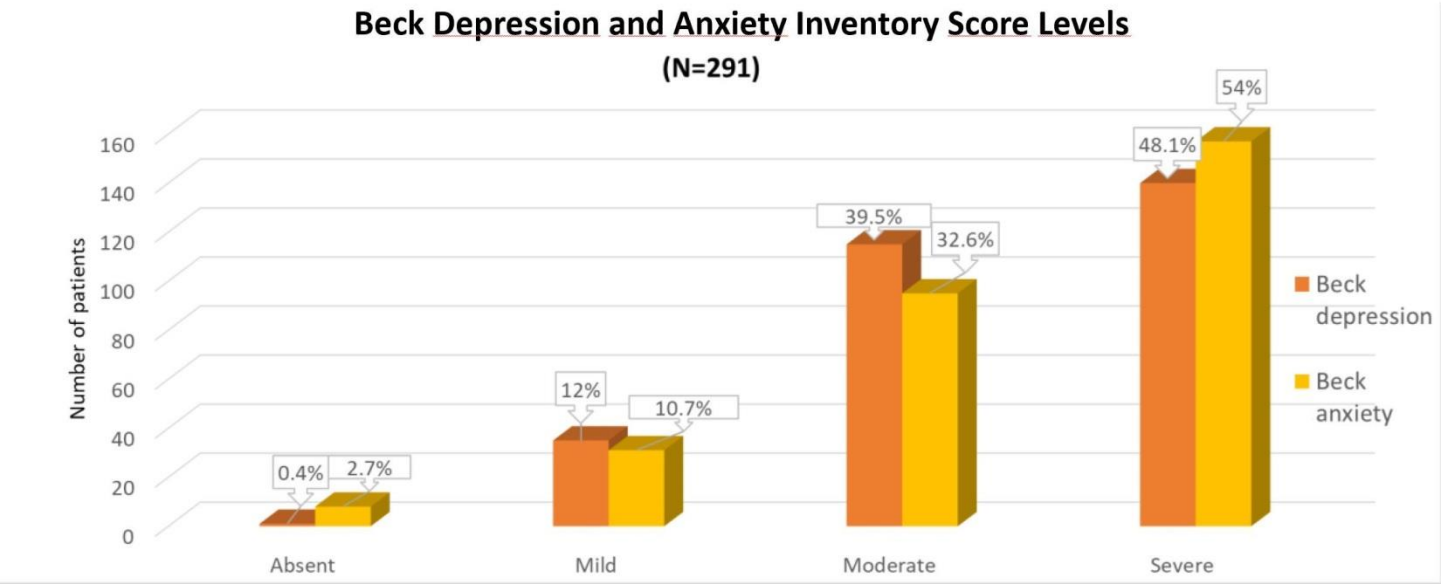

Figure1. Beck Depression and Anxiety Inventory Score Levels

DISCUSSION

In this study, we could not find a statistically significant relationship between the duration of disease and the severity of anxiety disorder and depression symptoms in migraine patients. Interestingly, we determined that the depression and anxiety inventory scores of patients with migraine were at similar levels to each other from the first years of their disease and at levels that could be considered moderate/severe in most of the patients.

It is well known that migraine is more common among the female gender, and in line with this predominancy, the majority of our migraine patients were female in our study (19,20).

A meta-analysis reported that the incidence of depression in patients with migraine ranged from 8.6% to 47.9% (21). It was reported that anxiety disorders occur 2-5 times higher in migraine patients than in the general population, and they develop twice as often in those with depression (22). Our study showed that 48.1% of the patients had severe depressive symptoms, 39.5% had moderate depressive symptoms, 32.6% had moderate anxiety symptoms, and 54% had severe anxiety symptoms. The reasons for the high depression and anxiety symptom scores in our study may be due to socio-cultural and educational differences and the fact that these inventories were not correlated with other psychiatric tests. On the other hand, the fact that the patients did not receive any antidepressant or mood stabilizer treatment for migraine prophylaxis in the last month may be the main reason for these high scores. Besides, we observed that the depression and anxiety levels of the patients were directly proportional to each other, which is in line with the view that anxiety disorder and depression are two-way risk factors for each other (23).

Pradeep et al., in their study investigating the disability caused by migraine, quality of life, and the factors affecting these, reported that they found the presence of comorbid psychiatric conditions to be risky in terms of quality of life with migraine. However, they could not reveal a significant relationship between the duration of having migraine disease and the presence of depression and anxiety disorder (7). On the other hand, Yaşar et al. did not determine a relationship between the duration of the disease and the level of depressive symptoms in young male migraineurs (12). Similarly, when we compared the anxiety disorder and depression symptom inventory scores of those with longer disease duration and those with shorter disease duration, we could not conclude a significant difference between them.

The relationship between migraine and depression appears to be bidirectional, as the presence of one is thought to increase the risk of developing the other (24). However, there is no current evidence that better control of depression helps control migraine. Since the presence of depression is a significant risk factor in the chronicity of migraine, it is crucial to detect and treat depression in patients with migraine (25,26). Moreover, migraine patients with depression are more resistant to migraine treatments and therefore more likely to suffer from drug overuse and its consequences (27).

The main hypotheses regarding the neurobiological mechanisms explaining the relationship between

psychiatric diseases such as anxiety disorder and depression and migraine are based on factors including serotonergic dysfunction, hyperactivity of the hypothalamic-pituitary-adrenaline (HPA) axis, hormonal effects, neuroinflammation, and sensitization of sensory and emotional neural networks, and pain-related cognition (22,28). On the other hand, the fact that anxiety disorder, depression, and migraine have intersecting triggers such as stress indicates the existence of common mechanisms in their neuropathophysiology (29,30). Migraine researches show that brain regions such as the anterior cingulate cortex, anterior insula, prefrontal cortex, hippocampus, and amygdala have abnormal function, structure, and connectivity, which play an essential role in determining emotional responses to pain and other sensory stimuli, and determining general affect and mood. More functional activation and stronger functional connections caused by pain in these brain regions probably contribute to determining the emotional aspect of migraine symptoms and may partly explain the co-existence of psychiatric disorders with migraine (22).

The main limitations of our study include the differences in the educational and socio-cultural levels of the individuals to whom the inventories were applied, the absence of a control group, the fact that the inventories were made among those who applied to the hospital with migraine headache, and it was not a community-based study, and we could not correlate our current data with other depression and anxiety inventories. The strengths of our study are that the inventories were implemented in a study group with relatively good inventory scores and close to each other in the subgroups formed according to the duration of the disease, in a period free from the effect of mood stabilizers or antidepressant drugs, and with our study we have contributed to the literature in this area, which has a limited number of studies.

Conclusion

No significant difference was determined between the severity of depression and anxiety symptoms in patients with a longer disease duration compared with those with a shorter duration. The data we obtained may be related to the fact that the co-existence of migraine and depression and anxiety symptoms is in the nature of the disease, independent of the disease process. Multicentered, extensive cohort studies in which the same individual is followed up with repeated inventories during the disease process will increase our knowledge in this area.

Ethics Committee Approval: Clinical Research Ethics Committee Approval of Istanbul Şişli Etfal Education and Research Hospital, dated:04/04/2013- decision no:1.

Authors' contributions: Conception and design of the study: EUO and MÖ. Acquisition of data: MÖ. Analysis of data: EUO. Drafting the manuscript and figures: EUO and MÖ.

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