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DEPRESSION AND ANXIETY IN PATIENTS WITH MIGRAINE AND TENSION-TYPE HEADACHE

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Purpose: The identification of headache patients who are at risk for psychiatric comorbidity is an important quality of life and prognostic issue. The purpose of this study was to assess psychiatric comorbidity in TTH and migraine patients.

Materials and Methods: The study group included 95 (75 female, 20 male) patients diagnosed with either migraine or TTH. All patients were requested to fill out a 44-item symptom list constructed according to DSM-IV diagnostic criteria for depression and anxiety disorders and to complete the Beck Depression Inventory (BDI) and Spielberger State-trait Anxiety Inventory (STAI). After that all patients were evaluated for the presence of psychiatric disorders according to DSM-IV criteria.

Results: Fifty-one (53.7%) patients had migraine while 44 (46.3%) had TTH and their mean ages were 32.77±7.8 and 30.32±9.4 years, respectively (p=0.11). The overall intensity levels of symptoms related to depression and anxiety were similar in both migraine and TTH patients. However, reduced libido (p=0.02), slowness (p=0.04) and nausea (p=0.003) were more intense in migraine patients. The mean BDI, SAI and TAI scores were elevated to the pathologic range in both migraine and TTH patients despite the absence of a significant difference between the groups. The incidences of depression, anxiety and depression+anxiety were 37.3%, 15.7% and 9.8%, respectively, in migraine patients and 43.2%, 9.1% and 6.8%, respectively, in TTH patients (p=0.92).

Conclusion: Depression and anxiety disorders are common and generally similar in extent and distribution in migraine and TTH patients.

Key Words: Migraine, Tension-Type Headache, Anxiety, Depression.

MIGREN VE GERILIM TIPI BASAĞRISINDA DEPRESYON VE ANKSIYETE

Amaç: Başağrısı olan olgularda psikiyatrik komorbidite riskinin belirlenmesi olguların yaşam kalitesi ve prognostik açıdan büyük önem taşımaktadır. Bu çalışmada migren ve gerilim tipi başağrısı (GTBA) olan hastalarda psikiyatrik bozukluklar araştırılmıştır.

Hastalar ve Yöntem: Kırıkkale Üniversitesi Tıp Fakültesi Nöroloji Anabilim dalında ayrıntılı anamnez ve nörolojik muayene sonunda uluslararası başağrısı kriterlerine göre migren ve gerilim tipi başağrısı tanısı alan 75 kadın, 20 erkek toplam 95 hasta çalışmaya alındı. Tüm hastalara DSM-IV'de depresyon ve anksiyete bozuklukları tanı kriterleri temel alınarak hazırlanmış kırk bir soruluk bir semptom sorgulama formu verildi. Bununla birlikte hastalara Beck depresyon ölçeği (BDÖ)ve durumluluk ve sürekli anksiyete ölçeği(STAI-t ve STAI-s) (Stait and trait) uygulandı. Formların tamamlanmasını takiben olgulara psikiyatrik değerlendirme yapıldı.

Bulgular: Çalışma grubunu oluşturan olguların 51'inde (%53.7) migren ve 44'ünde (%46.3) GTBA mevcut olup ortalama yaşları sırasıyla 32.77□7.8 ve 30.32□9.4 yıl bulundu (p=0.11). Her iki grupta semptomların şiddeti genel olarak benzer olmasına karşın migrenli olgularda libido azalması (p=0.02), yavaşlık (p=0.04) ve bulantı'nın (p=0.003) daha ağır olduğu görüldü. Gruplar arasında fark olmamakla beraber hem migren hem GTBA'lı olgularda BDÖ, STAI-t ve STAI-s skorlarının patolojik derecede yüksek olduğu belirlendi. Psikiyatrik değerlendirme sonrasında migrenli olguların %37.3'ünde depresyon, %15.7'sinde anksiyete, %9.8'inde depresyon+anksiyete birlikte saptanırken GTBA olguların %43.2'sinde depresyon, %9.1'inde ankziyete, %6.8'inde depresyon+anksiyete birlikte bulunuyordu (p=0.92)

Sonuç: Bu çalışmada hem migren hem GTBA'sında yüksek oranda ve benzer şiddette depresyon ve anksiyete komorbiditesi olduğu sonucuna varılmıştır.

Anahtar Sözcükler: Migren, Gerilim Tipi Başağrısı, Anksiyete, Depresyon.

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The recognition of the concomitant presence of psychiatric symptoms in patients with headache disorders, particularly migraine and tension-type headache (TTH), has evolved into remarkable clinical and scientific interest. Recently the term "psychiatric comorbidity" was introduced to address patients suffering from both clinical entities. The first studies were related to migraine, and the comorbidity was explained by either the presence of a common etiological factor (serotonergic system) or a cause-effect relationship between migraine and anxiety-depression or the reverse (1,2). The International Headache Society (IHS, 2004) (3) regards anxiety and depression as possible causes of TTH. The question of whether depression and anxiety-related symptoms are comorbid to the headache disorders or a reaction to the disease itself is yet unanswered; however, a bi-directional influence is suggested (4). In addition, headache pathophysiology remains obscure. Certain studies implicate a personality structure for patients with both migraine and TTH (5,6). Patients with TTH were suggested to have difficulty in recognizing and expressing their feelings (6). It was also postulated that they had unexpressed anger, aggression and hostility (5). Frequent headache and disability were reported to be associated with impaired quality of life, anxiety and depression (7,8). However, headache severity had no impact on the degree of psychological distress (8). The purpose of this study was to assess the extent and variability of depression and anxiety disorders in TTH and migraine patients and to analyze whether certain symptoms could predict the presence of a psychiatric disorder.

MATERIALS AND METHODS

Sample

The study group included 95 patients diagnosed with either migraine or TTH in our clinic from June to December 2003. Seventy-five (78.9%) patients were female and 20 (21.1%) were male. Education levels were 37.9% primary school (5 years), 14.7% secondary school (3 years after primary school), 23.3% high school and 24.2% university. Most of the women, 66 (88%) patients, were housewives, while 7 (35%) males were unemployed. In every patient a thorough medical history including medications was obtained and a general physical and neurological examination was performed by the same neurologist to exclude any reason for secondary headache. The whole sample was subjected to routine serum biochemistry. Additional imaging by computed tomography or magnetic resonance imaging and ENT and ophthalmology consultations were performed if indicated. Patients were excluded from the study if they had a neurological disease, previous psychiatric disorder, chronic regular analgesic use, and any reason for secondary headache such as eye pathology, sinusitis etc. or a major illness such as diabetes, heart disease, and malignancy. The study was performed in accordance with the Helsinki Declaration and all

patients were adequately informed and agreed to participate in the study.

Headache Diagnosis

On their initial visit a detailed headache history was obtained in all cases. The history included duration of headache, headache frequency, intensity (on a 0 to 5 scale in which "0" represented "not present" and "5" "the worst that it could be"), character (throbbing/pulsating vs. pressing/tightening, unilateral vs. bilateral), duration of the attack, aggravation by physical activity and the presence of nausea, vomiting, photophobia and phonophobia. The final diagnosis was confirmed according to the new classification accepted by the IHS (2004) (3). For the purpose of simplicity, migraine was not classified into subtypes including the newly defined form chronic migraine. Similarly, no distinction was made between episodic and chronic TTH. Patients were excluded from the study when a definitive distinction between TTH and migraine could not be made clinically.

Psychiatric Evaluation

All patients with headache were requested to fill out a 44-item symptom list simply constructed from the DSM-IV (1994) (9) diagnostic criteria for depression and anxiety disorders (Appendix A). The questions involved the patients' symptoms over the previous 4 weeks. The first 20 items were the usual symptoms of depression like depressed mood, loss of interest, suicidal thoughts and sleep disturbances, while items 21-44 were physical and psychological complaints commonly seen in anxiety disorders. Some symptoms (2,5,9,15-20) were common to both anxiety and depression. All patients were asked to rate the severity of the symptoms on a 0 to 5 scale in which "0" represented "not present" and "5" "the worst that it could be". The patients then completed self-report measures of psychological function: the Beck Depression Inventory (BDI) and the Spielberger State-trait Anxiety Inventory (STAI) (10,11). The BDI consists of 21 items that question the presence of vegetative, emotional, cognitive and motivational symptoms of depressive disorders and it is one of the most frequently used scales to screen various population groups. The score is correlated with the degree of depression. Its validity-reliability was confirmed by previous studies performed in this country (12). The STAI combines two measures of anxiety and consists of 40 items (20 items for state anxiety and 20 items for trait anxiety). State anxiety is defined as a transitory emotional response of apprehensive thoughts and unpleasant feelings and is measured by the state (SAI) part of the STAI (13). The trait part (TAI) is concerned with a type of personality that would consistently experience anxiety in stressful conditions and describes a more continuous condition. Similar to BDI, the validity-reliability of STAI for our population was confirmed before (14). Scores over 35 were considered significant for the presence of anxiety. After the completion of all forms a psychiatrist evaluated the patients according to DSM-IV criteria (1994) (9).

Statistics

The statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) program. The Mann-Whitney U test was used to compare numeric variables between the two groups and Kruskal-Wallis analysis was performed for more than two independent variables. The chi-square test was used for comparison of categorical variables. At the final step, backward conditional logistic regression analysis was used to investigate factors predicting the presence of a psychiatric disorder. As there were too many variables to allow this analysis, the symptoms were divided into 3 groups, considering the DSM-IV criteria as depression, anxiety and common symptoms for both disorders as stated before. P values <0.05 were considered statistically significant.

RESULTS

Headache duration, frequency and duration of the episodes are given in Table 1. Fifty-one (53.7%) patients had migraine while 44 (46.3%) had TTH. The mean ages for migraine and TTH patients were 32.77±7.8 and 30.32± 9.4 years, respectively (Mann-Whitney U test, p=0.11). Sex distribution (chi-square=1.91, p=0.21) (Table 2) and education level (chi-square =0.969, p=0.81) were similar in both migraine and TTH patients.

Intensity levels of the symptoms, compared using the Mann-Whitney U test, were generally similar in migraine and TTH patients. However, the mean scores of reduced libido (p=0.02), slowness (p=0.04) and nausea (p=0.003) were sig-

Table 1: Headache duration, duration of the episode and frequency of the episodes.

Headache Duration(Months)	N(%)	Duration of Episode (hours)	N(%)	Frequency	N(%)
3-6	12(12.6)	<6	25(26.3)	Every day or other day	53(55.8)
6-12	20(21.1)	6-12	28(29.5)	1-2/ week	27(28.4)
12-60	38(40)	13-24	25(26.3)	1/2 weeks	11(11.6)
>60	25(26.3)	25-72	16(16.8)	1/month	3(3.2)
		>72	1(1.1)	Other	1(1.1)
Total	95	Total	95	Total	95

Table 2: Headache type, sex and education level of the patients.

Headache type	Sex (%)		Education Level (%)			
	Male	Female	Primary	Secondary S.	High S.	University
Migraine	8(40)	43(57.3)	19(52.8)	9(64.3)	12(54.5)	11(47.8)
TTH	12(60)	32(42.7)	17(47.2)	5(35.7)	10(45.5)	12(52.2)
Total	20(100)	75(100)	36(100)	14(100)	22(100)	23(100)

p=0.21 for headache type and sex
p=0.81 for headache type and education level

Table 3: Mean Beck Depression Inventory (BDI) and State Anxiety Inventory (SAI) and Trait Anxiety Inventory (TAI) scores according to sex and headache sub-types (Mann-Whitney U test).

Sex	BDI score	SAI score	TAI score
Female	15.6±9.4	53.4±11.2	49.7±10.5
Male	16.1±7.3	56±8.6	46.7±10.7
P value	0.68	0.41	0.38
Headache type	BDI score	SAI score	TAI score
Migraine	15.9±9.1	53.2±9.2	50.1±9.9
TTH	15.5±8.8	54.9±12.3	47.9±11.3
P value	0.22	0.46	0.32

nificantly higher in migraine patients. Although statistically not significant, migraine patients also recorded higher scores for easy fatigability (p=0.07) and TTH patients for feelings of unease and impatience (p=0.06).

The BDI, SAI and TAI scores were similar in male and female patients (Table 3). Although the mean BDI, SAI and TAI scores were elevated in both migraine and TTH patients, there was no significant difference between the 2 headache types (Table 3). Furthermore, there was no relation between headache duration, duration of the episode, frequency of the attacks and BDI, SAI, TAI scores (Kruskal-Wallis analysis, p>0.05).

The final evaluation showed that 73 (76.8%) patients in this series had a psychiatric disorder, while 22 (15 female, 7 male)(23.2%) were considered normal. The psychiatric diagnoses included depressive disorders in 38 (40%), anxiety disorders in 12 (12.6%), depression+anxiety (when patients fulfilled the criteria for both disorders) in 8 (8.4%), adjustment disorder in 9 (9.5%) and other disorders in 6 (6.3%) cases (Table 4). The incidences of depression, anxiety and depression+anxiety were 37.3%, 15.7% and 9.8% respectively in migraine patients and 43.2%, 9.1%, 6.8% respectively in TTH patients. There was no difference between the two headache types for the presence of a psychiatric disorder (chi-square =0.16, p=0.7) or distribution (chi-square =1.4, p=0.92) of psychiatric diagnoses.

No difference was found between the sexes for the presence of a psychiatric disorder (chi-square=1.99, p=0.16) or distribution (chi-square =2.6, p=0.76) of psychiatric diagnoses (Table 4). There was also no correlation between the presence of a psychiatric disorder and the duration of the headache disorder (Spearman r=0.06, p=0.29), frequency and duration of attacks (Spearman r=0.07, p= 0.26 and Spearman r=0.12, p=0.13 respectively) or headache intensity (Mann-Whitney U test, p=0.33).

Pessimism, agitation, insomnia, apprehensive expectation and worry and fear were identified as predicting factors for the presence of a psychiatric disorder in a migraine or TTH patient by logistic regression analysis (Table 5).

Table 4: Psychiatric diagnoses according to sex and headache type (dep=depression, anx=anxiety, dis=disorder).

Sex	Psychiatric Diagnoses (%)						Total (%)
	Normal	Depression	Anxiety	Dep.+Anx.	Adjustment Dis.	Other	
Female	15(20)	30(40)	10(13.3)	7(9.3)	8(10.7)	5(6.7)	75(100)
Male	7(35)	8(40)	2(10)	1(5)	1(5)	1(5)	20(100)
Total	22(23.2)	38(40)	12(12.6)	8(8.4)	9(9.5)	6(6.3)	95(100)
Headache Type	Psychiatric Diagnoses (%)						Total (%)
	Normal	Depression	Anxiety	Dep.+Anx.	Adjustment Dis.	Other	
Migraine	11(21.6)	19(37.3)	8(15.7)	5(9.8)	5(9.8)	3(5.9)	51(100)
TTH	11(25)	19(43.2)	4(9.1)	3(6.8)	4(9.1)	3(6.8)	44(100)
Total	22(23.2)	38(40)	12(12.6)	8(8.4)	9(9.5)	6(6.3)	95(100)

Table 5: Regression coefficients, Wald and significance of independent items of the symptom checklist that predict the presence of psychiatric disorder; and the percentage of patients correctly classified into groups. (Backward conditional logistic regression analysis) (TTH= tension-type headache, sym=symptoms, dep=depression, anx=anxiety, B= coefficient of regression, S.E.: estimated standard deviation, Wald= test for the null hypothesis that a coefficient is zero, d.f.=degrees of freedom, sig. =significance, % correctly classified= the rate of patients that were correctly classified into dependent variable groups with the aid of the tested independent variable)

Dependent Variable	Independent Variables							
	Dep. Sym.	**B**	**S.E.**	**Wald**	**d.f.**	**Sig.**	**Exp(B)**	**%Correctly Classified**
	I-13	0.35	0.16	4.53	1	0.03	1.42	76.8%
	Dep.+Anx. Sym	**B**	**S.E.**	**Wald**	**d.f.**	**Sig.**	**Exp(B)**	**%Correctly Classified**
	I-9	0.39	0.17	5.27	1	0.02	1.47	82.1%
	I-15	0.34	0.16	4.81	1	0.03	1.41	
Psychiatric Diagnoses (0=None) (1=Present)	**Anx.Sym**	**B**	**S.E.**	**Wald**	**d.f.**	**Sig.**	**Exp(B)**	**%Correctly Classified**
	I-21	0.31	0.15	4.43	1	0.04	1.37	82.1%
	I-22	0.53	0.21	6.51	1	0.01	1.69	

DISCUSSION

The first edition of the International Classification of Headache Disorders has been in clinical use for many years and is supported by most clinicians because of its reliability and validity. The new classification is a further step forward (3). The new classification also included another group, "headache attributed to psychiatric disorders", and the new defined form chronic migraine. In daily practice, clinicians may face difficulties in categorizing patients into the hierarchically defined subtypes. Thus, in this study we used only the first level diagnosis for simplicity and categorized the patients into two groups (migraine and TTH), and patients were excluded when the two could not be discriminated between clinically.

The presence of a psychiatric comorbidity may cause a poorer prognosis and worse quality of life in patients with headache (7). Previous reports confirmed that BDI and STAI scores were elevated in many types of headache, such as migraine, TTH, combined migraine and TTH, posttraumatic headache and chronic headache (15-19). The increase was even reported to be in the depressed range (BDI score=15) in patients with chronic headache, similar to our study (17). Similarly, various studies have shown that STAI scores were close or in the anxious state in migraine, TTH and combined migraine and TTH when compared to the controls (15,18). Quality of life was more impaired in chronic headache types (chronic TTH and chronic daily headache) when compared to migraineurs and in patients with frequent episodes (8). However, the severity of headache was not found to be correlated with anxiety or depression (8).

Most clinical studies that confirmed the association between psychiatric and headache disorders were based on self-report measures, most commonly the BDI and STAI rather than a psychiatric evaluation for the diagnosis of depression and anxiety disorders (15-21). The BDI is one of the most frequently used scales to screen for the presence of depression in various population groups. After the introduction of DSM-IV some modifications were suggested, like the Major Depression Inventory (22). Nevertheless, both address similar complaints related to depression. However, in both inventories a statement is given for each item and the patient answers "true" or "false" (BDI) or "never" to "always" (TAI) and a total score is obtained to assess the intensity of the disorder. The symptom list we used in this study was not designed as a screening questionnaire. It was a simple list prepared according to DSM-IV diagnostic criteria for depression and anxiety disorders as stated before. It also covers all of the symptoms given in MDI and almost all of the BDI except crying, social withdrawal and concern for health. In this respect we analyzed whether certain symptoms could predict the presence of a psychiatric disorder in patients with TTH or migraine. Pessimism, agitation, insomnia, apprehensive expectation and worry and fear were found to be factors that might alert neurologists to the presence of a psychiatric disorder in these two headache types. It is apparently inconsistent to classify patients into headache types solely based on symptoms of depression and anxiety. In our series, the overall intensity levels of symptoms related to depression and anxiety were similar in migraine and TTH patients except for reduced libido (p=0.02), slowness (p=0.04) and nausea (p=0.003) (as expected), which were more intense in migraine patients.

Our study confirmed the presence of a psychiatric comorbidity in patients with TTH and migraine. The mean BDI, SAI and TAI scores were elevated to the pathological range in both headache types; however, no difference was present between the groups. The incidence of psychiatric disorders in patients with headache is variable in the literature. Puca et al. (23) reported that 85% of patients with TTH had at least one psychiatric disorder or psychosocial distress. Anxiety was the most common disorder, alone (53.4%) or with depression (36.2%),

followed by depression (36.8%). The authors stated that TTH was more related to anxiety disorders because of chronic psychopathology (neurotic personality), and depressive disorders were more prevalent in migraine (serotonergic pathology) patients (23,24). However, this simplistic approach was not confirmed by other studies (6,7,25). In the series reported by Juang et al. (25), 64% of patients with chronic TTH had psychiatric diagnoses but major depression was more common than anxiety disorders. Holroyd et al. (7) reported similar incidences for depression and anxiety disorders in patients with headache. Likewise, in our study the incidences of depression, anxiety and depression+anxiety were similar: 37.3%, 15.7% and 9.8% respectively in migraine patients and 43.2%, 9.1% and 6.8% respectively in TTH patients. It is apparent that both anxiety and depression are common in both migraine and TTH. Some series have confirmed that women are at higher risk for psychiatric comorbidity, particularly depression (21,25,26). In our series, BDI, SAI and TAI scores were similar in male and female patients, but the majority of our patients were women.

In our study, we did not have a control group but it is apparent that the prevalence of the psychiatric disorders in our patient group is too high to represent the general population (27). However, this high prevalence might reflect increased demand for medical treatment in the presence of a comorbid pathology. Previous studies in this country revealed that the point prevalence rate for depressive symptoms was about 20%, while for clinical depression it was 10% (28). There might also have been a selection bias; most of our patients were women and housewives, and the female sex and lower socioeconomic status are risk factors for depressive disorders (28). The lifetime major depression prevalence was reported as 8.9% in males and 21.7% in females (29). Another point revealed by this study was the absence of any correlation between the presence of a psychiatric disorder and the duration of the headache disorder or frequency of attacks or duration of attacks or headache intensity. Thus, we might suggest that the presence of anxiety and depression was not caused solely by the disability resulting from the headache itself and might involve other factors such as personality traits, heredity, and environmental factors.

In conclusion, depression and anxiety disorders are common and generally similar in extent and distribution in migraine and TTH patients. Psychological self-report measures and symptom lists might be good tools for screening patients with headache. However, alone they might be insufficient for psychiatric diagnoses. It is also important to determine which patients might benefit from psychiatric evaluation as the presence of psychiatric comorbidity could cause a poorer prognosis and worse quality of life (7). Accordingly, the identification of headache patients who are at risk for psychiatric comorbidity is the neurologist's most important role. In this respect, this study could be an important contribution to the literature addressing certain symptoms of depression and anxiety in patients with headache that could lead to diagnosis. However, due to the small number of patients more data are probably necessary to allow a more valid conclusion.

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