Nocturnal Panic Attack: Is It an Another Subtype?

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ABSTRACT

Nocturnal panic attack: is it an another subtype?

Objective: The aim of this study is to investigate if the nocturnal panic attack has different features and might be considered as a subtype or not.

Methods: Sociodemographic data form, SCID-I, SCID-II, Panic and Agoraphobia Scale (PAS), Hamilton Depression Scale (HAM-D), Beck Anxiety Scale, and Bakırköy Panic Disorder Behavioral Changes Form are applied to the participants. 51 of the 98 patients were suffering from Nocturnal Panic Attacks according to the inclusion/exclusion criteria.

Results: It was revealed that 47.9% of the panic disorder patients were suffering from nocturnal panic attacks. The most frequent symptoms in nocturnal panic disorder cases were experiences of feelings like drowning, lethargy, palpitation, vertigo, fear of death, and anxiety. The existence of nocturnal panic attacks is found to be related with severity of the disorder and comorbid depression. Moreover, comorbid sleep disturbances characterized with troubles in falling asleep, difficulty in sustaining sleep, feeling tired in the morning, were observed. There were sleep related avoidances and behavioral changes. Panic disorder patients with nocturnal panic attacks were found to avoid sleeping, or going to bed alone.

Conclusions: Panic disorder cases with nocturnal panic attacks had more severe symptoms. From here, it can be concluded that it might be a subtype of panic disorder.

Key words: Nocturnal panic attack, subtype, panic disorder

ÖZET

Uyku panik atağı: Farklı bir alt tip mi?

Amaç: Bu çalışmanın amacı, uyku panik atağının (UPA) farklı bir yapıya sahip olup olmadığının ve ayrı bir alt tip olarak kabul edilip edilemeyeceğinin araştırılmasıdır.

Yöntem: Çalışmaya alınan vakalara, bu çalışma için geliştirilen sosyodemografik soru formu, SCID-I, SCID-II, Panik Agorafobi Ölçeği (PAÖ) ve davranış değişikliklerini değerlendirmek amacıyla Bakırköy Panik Bozukluğu Davranış Değişikliği Formu, Hamilton Depresyon Derecelendirme Ölçeği (HDDÖ) ve Beck Anksiyete Ölçeği uygulanmıştır. Çalışmaya dahil edilen 98 panik bozukluğu hastasının 51'inde, çalışma kriterlerine göre uyku panik atağı saptanmıştır.

Bulgular: Yaptığımız çalışmada, panik bozukluğu hastalarının %47.9'unun uyku panik atağı geçirdiği bulunmuştur. Çalışmamızda, uyku panik atağı olgularında en sık görülen belirtiler; boğulma hissi, uyuşukluk, çarpıntı, denge kaybı, ölüm korkusu ve korkuya kapılma olarak bulunmuştur. UPA olan panik bozukluğu olgularında, hastalığın daha şiddetli seyrettiği, depresyon birlikteliğinin sık olduğu bulunmuştur. Ayrıca, bu hastalarda uyku bozukluklarının eşlik ettiği, uykuya dalma ve sürdürmekte zorluk yaşandığı, sabah yorgun kalkmanın sık görüldüğü bulunmuştur. Ek olarak, uyku ile ilgili kaçınmalar ve davranış değişiklikleri saptanmıştır. Uyku panik atağı olan panik bozukluğu olgularının, uyumaktan ve yalnız yatmaktan kaçınma davranışı sergilediği bulunmuştur.

Sonuç: Uyku panik atağı olan panik bozukluk grubunda semptomların daha şiddetli yaşanması, uyku panik atağının ayrı bir alt grup olabileceğini düşündürmektedir.

Anahtar kelimeler: Uyku panik atağı, alt tip, panik bozukluğu

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INTRODUCTION

Panic disorder (PD), is an anxiety disorder which appears with recurrent unexpected panic attacks and accompanied by persistent concern about having additional attacks (Anticipatory anxiety) (1). Panic attack (PA) is an intense anxiety attack which can be seen in panic disorder as well as other psychiatric disorders under the topic of anxiety disorders (social phobia, posttraumatic stress disorder, obsessive-compulsive disorder, separation anxiety disorder) (2). Recent studies in the literature reported that patients with panic disorder were clustered around different symptom clusters and show different characteristics

according to these symptom clusters (3). It is now understood that panic disorder is not a homogenous disorder but a heterogenous group consisting of several subtypes. It is thought that each subtype is different by clinical presentation, behavioral change and socio-demographic characteristics (4). Determining subtypes of panic disorder and its characteristics is important in evaluating disease severity, comorbidity of psychiatric and physical diseases, response to different treatment options and prognosis (5,6). "Masked anxiety" and "alexythimic panic" was first subtypes described (7,8). "Non-cognitive panics" which do not have cognition related fear (8,9) and "nocturnal panic attacks" (10) were described in the following years. Studies about nocturnal panic attacks were started in 1989 by Mellman, Craske and Barlow and continued with contribution of many well-reputed investigators (11-14).

Nocturnal panic attack (NPA) is a subtype of panic disorder with panic attacks starting during sleep without a cause, awakes the patient and causes terror. Studies reported that repetitive nocturnal panic attacks are seen in 18-33% of panic disorder patients (8). Most prevalent symptoms observed in NPA cases are dyspnea and hot flushes followed by palpitation (3,15). Several authors reported that clinical picture is more severe, attack frequency during daytime is higher and somatic sensations are more intense in nocturnal panic disorder cases compared to classical panic cases (15-17). Norton et al. (3) reported that there are more symptoms in nocturnal panic attack cases (especially chest pain) but there is no difference in fear of death, shortness of breath and apnea. Agargün and Kara (4) reported that in panic disorder cases with NPA, there is high comorbidity with major depression and this makes the picture more severe and suicide risk also increases in these cases. Melman and Uhde (10) showed in their comparison of classical panic disorder from panic attack triggers point of view found that relaxation and sleep deprivation have more role in nocturnal panic attacks of cases compared to classical panic attacks.

In this study we aimed to determine behavioral changes in cases with NPA, their classification, detect the relationship between these behavioral changes and variables such as clinical presentation, age of

onset, severity and duration of the disease, avoiding behaviors and socio-demographic characteristics and comparing to non-NPA classical panic disorder patients.

MATERIAL AND METHODS

Sample

Ninety-eight patients admitted to outpatient clinics of Prof. Dr. Mazhar Osman Bakırköy Research and Training Hospital for Psychiatry, Neurology and Neurosurgery, diagnosed as panic disorder by at least one psychiatrist during clinic interviews were between 18 and 65 years old, at least primary school graduate and volunteered to participate in the study. For cases in nocturnal PD group, following criteria were determined: history of NPA for at least 6 months and at least two NPAs in the last month or 2 attacks in the last 2 months and mild anxiety of repeating NPA (13,14). Panic disorder due to general medical condition or due to direct effects of alcohol-substance use according to DSM-IV diagnostic criteria and patients with severe neurological diseases and pathological EEGs and physical diseases were excluded from the study.

Method

SCID-I (Structured Clinical Interview for DSM-IV Axis I Disorders) was administered to all panic disorder patients to confirm their axis I diagnoses and detect comorbid diagnoses and cases with an additional psychiatric diagnosis were excluded from the study.

In 51 panic disorder patients out of 98 included in the study, NPA were detected according to criteria mentioned in sample section. Socio-demographic question form developed for this study were administered to cases included in the study and their personal, familial and clinical characteristics were determined. Panic disorder diagnosis was confirmed by using SCID-I Clinical Version consistent with DSM-IV in psychiatric interview and possible comorbid diagnoses were determined. SCID-II Clinical Version consistent with DSM-IV was also administered in

psychiatric interview to investigate whether there is a personality disorder and its impact on disease and behavioral changes. Panic Agoraphobia Scale (PAS) to assess expectation anxiety, agoraphobic avoidance, familial, social and occupational functionality and somatic disease ideas and Bakırköy Panic Disorder Behavioral Change Form to assess behavioral changes were also administered.

Hamilton Depression Rating Scale (HAM-D) and Beck Anxiety Scale was administered to both disease groups to assess severity of depressive symptoms and anxiety of patients included in the study, to compare severity of depressive symptoms and anxiety rates of the groups and to evaluate whether there is any correlation between severity of depressive symptoms and anxiety and behavioral changes (if present) within each group.

Material

1. Socio-demographic Data Form: It is a form consisting of 28 questions prepared by researchers to evaluate various socio-demographic data and clinical characteristics of cases included in the study.

2. Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I): It is used for surveying DSM-IV diagnostic criteria and investigating symptoms systematically (18,19).

3. Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II): SCID-II is a structured interview providing to diagnose personality disorders (20).

4. Panic Disorder Behavioral Change Question Form (appendix 1): This is a questionnaire developed by Özer to detect behavioral changes of panic disorder patients. When questionnaire is being formed, clinical observations, patient reports and "Lifetime Panic Agoraphobia Spectrum Scale" developed by Turla et al. (21) were utilized. Behavioral changes were divided into 3 topics: avoidance behavior, precautionary measure behavior and guarantee seeking behavior. Questionnaire consists of 88 questions and 4 choices for each question. If behavioral changes were not present before onset of panic disorder and never present after onset, then "a"

choice is ticked; if already present before onset of panic disorder and continue without any change after onset of panic disorder, then "b" choice is ticked; already present before onset of panic disorder but continue and become more intense after onset of panic disorder, then "c" choice is ticked; definitely not present before panic disorder but occur after the onset of panic disorder, then "d" choice is ticked.

5. Panic Agoraphobia Scale (PAS): This scale is administered to patients with panic disorder with or without agoraphobia. It has five sub-units:

a-Panic attacks: Three questions with grading and one question without grading

b-Phobic avoidance and Agoraphobia: 3 questions

c-Anticipatory anxiety: 2 questions

d-Disability: 3 questions

e-Assumption of organic disease: 2 questions

Each sub-unit makes component scores, sum of all components determine total severity score. Turkish adaptation was done by Tural et al. (21-23).

6. Beck Anxiety Scale: This is a scale used for grading of anxiety present. It consists of a total 21 somatic and cognitive anxiety complaints (23).

7. Hamilton Depression Rating Scale (HAM-D): This is a scale used to assess severity of depression and change in severity of patients (23).

Statistical Analyses

SPSS Windows package software was used for statistical analyses. For categorical variables chi-square test, for comparison of normally distributed data two-paired t test and for comparison of not normally distributed data Mann-Whitney-U test was used. Level of significance was determined <0.05 for all tests.

RESULTS

NPA were detected in 51 of 98 patients with panic disorder (52.1%). In both groups there were more women (84.3% with NPA and 70.2% without NPA), more married (86.3% with NPA and 63.8% without NPA) and mean age was found 40.6±8.4 in NPA group and 37.7±9.5 in non-NPA group. There were no

statistically significant differences between groups for gender (χ^2=2.79, p=0.09), age (t=1.62, p=0.10) and marital status (χ^2=6.76, p=0.08). However, there were no statistically significant differences between NPA and non-NPA groups for educational level (χ^2=8.26, p=0.041) and work history (χ^2=8.41, p=0.004). While 70.6% of NPA group were primary school graduates, in non-NPA group 42.6% were primary, 14.9% were secondary and 31.9% were high school graduates. In NPA cases, educational levels were lower and there were more unemployed patients.

Mean disease duration was 104±98.3 months in NPA group and 99.4±92.9 months in non-NPA group. This difference was not statistically significant (Z=-0.06, p=0.94). When groups were compared according to first attack durations, mean attack duration in NPA group was 34.9±27.3 minutes and 36.2±33.5 minutes in non-NPA group and this finding was not statistically significant (Z=-0.02, p=0.85).

Clinical Characteristics about Medical and Family History: There were no statistically significant differences between NPA and non-NPA groups for parents' loss (χ^2=0.00, p=0.99), parents' separation (χ^2=0.37, p=0.53), school phobia (χ^2=3.60, p=0.05), separation anxiety (χ^2=0.50, p=0.47), suicidal attempt (χ^2=1.13, p=0.28) and a stressor in the previous year (χ^2=0.07, p=0.77). However, NPA group reported more stressors in the previous month compared to non-NPA group (χ^2=3.93, p=0.04).

Alcohol and Psychotropic Substance Use (PTS): There were no statistically significant differences between NPA and non-NPA patients for alcohol use (χ^2=0.89, p=0.34), PTS use (χ^2=0.93, p=0.33), presence of panic disorder in family history (χ^2=0.10, p=0.74) and history of general medical disease (χ^2=0.02, p=0.86). However, there was a statistically significant difference for family history of other psychiatric disorders (χ^2=5.40, p=0.02).

Sleep Disorders: There were statistically significant differences between NPA and non-NPA groups for difficulty in falling asleep (χ^2=39.5, p<0.001), difficulty in sleep maintenance (χ^2=50.4, p<0.001) and waking up tired in mornings (χ^2 = 56.1, p<0.001). It was found that NPA group experienced more difficulties in falling asleep and maintaining sleeping, wake up tired in the morning more (p<0.001) and avoid sleeping (χ^2=33.8, p<0.001) and lying in the bed alone (p<0.001, χ^2 =39.9) more than non-NPA group. When attack times of NPA group were examined, it was seen that attacks occurred mostly at 03.00 A.M. (28%), secondly at 02.00 A.M. (10%) and thirdly at 04.00 A.M. (5%).

Characteristics of the First Panic Attack: When NPA and non-NPA groups are compared, no statistically significant difference was found for location of the first panic attack (χ^2=8.8, p=0.11), accompanying activity with the first panic attack (χ^2=11.9, p=0.06) and attitude during the first panic attack (χ^2=2.2, p=0.82). In both groups, it was found that the first panic attack was experienced at home (NPA: 68.6%, non-NPA: 44.7%) and resting (NPA: 45.1%, non-NPA: 55.3%) and there was need for emergency hospital admission (NPA: 56.9%, non-NPA: 57.4%).

Panic Agoraphobia Scale (PAS) and Hamilton Rating Scale for Depression (HAM-D) Scores: There were statistically significant differences for PAS (t=3.2, p<0.001) and HAM-D (t=4.3, p<0.01) scores between NPA and non-NPA groups. Patients with NPA scored higher at both scales administered.

Relationship Between Anxiety Symptoms and Beck Anxiety Inventory: In NPA group, numbness (t=2.17, p=0.03), Fear of worst happening (t=2.6, p=0.01), palpitation (t=3.2, p=0.002), loss of balance (t=2.1, p=0.04), shaky / unsteady (t=2.05, p=0.04), fear of dying (t=2.3, p=0.02), feeling afraid (t=3.07, p<0.01) and feeling of choking (t=3.3, p<0.01) were seen more than non-NPA group but no statistically significant difference was found for hot flushes, wobbliness in the legs, unable to relax,dizzy or lightheaded terrified or afraid, nervous, hands trembling, fear of losing control, difficulty in breathing, faint / lightheaded (p>0.05). There were also no significant differences were found between groups for total scores of Beck Anxiety Inventory (Table 1).

Avoidance-Precautionary Measures Behavior: When patients with or without NPA were compared according to responses they had given to 32 questions in precautionary measure taking section of PA behavioral change questionairre, NPA patients performed following

Table 1: Anxiety Symptoms - Beck Anxiety Scale Scores

	NPA	n	Mean	S.D.	t	p
Beck Anxiety Total	NPA Present	51	34.75	2.44	0.43	0.67
	NPA Absent	47	31.21	5.47		
Numbness or tingling	NPA Present	51	1.53	1.16	2.17	0.03
	NPA Absent	47	1.04	1.06		
Feeling hot	NPA Present	51	1.71	1.24	1.59	0.12
	NPA Absent	47	1.32	1.16		
Wobbliness in legs	NPA Present	51	1.73	1.15	1.70	0.09
	NPA Absent	47	1.32	1.22		
Unable to relax	NPA Present	51	1.57	1.27	1.10	0.27
	NPA Absent	47	1.30	1.16		
Fear of worst happening	NPA Present	51	1.82	1.18	2.64	<0.01
	NPA Absent	47	1.17	1.27		
Dizzy or lightheaded	NPA Present	51	1.61	1.22	1.96	0.05
	NPA Absent	47	1.15	1.05		
Heart pounding/racing	NPA Present	51	2.33	1.05	3.25	<0.01
	NPA Absent	47	1.62	1.13		
Unsteady	NPA Present	51	1.47	1.36	2.10	0.04
	NPA Absent	47	0.94	1.13		
Terrified or afraid	NPA Present	51	1.49	1.27	1.24	0.22
	NPA Absent	47	1.17	1.27		
Nervous	NPA Present	51	1.63	1.25	1.01	0.31
	NPA Absent	47	1.38	1.13		
Feeling of choking	NPA Present	51	2.10	1.22	3.32	<0.01
	NPA Absent	47	1.26	1.29		
Hands trembling	NPA Present	51	1.33	1.23	1.33	0.19
	NPA Absent	47	1.02	1.09		
Shaky / unsteady	NPA Present	51	1.57	3.13	2.05	0.04
	NPA Absent	47	0.60	0.95		
Fear of losing control	NPA Present	51	1.10	1.17	0.99	0.32
	NPA Absent	47	0.87	1.08		
Difficulty in breathing	NPA Present	51	1.98	1.29	1.34	0.18
	NPA Absent	47	1.55	1.84		
Fear of dying	NPA Present	51	2.59	2.89	2.33	0.02
	NPA Absent	47	1.51	1.36		
Scared	NPA Present	51	2.18	1.14	3.07	<0.01
	NPA Absent	47	1.45	1.21		
Indigestion	NPA Present	51	1.43	1.31	1.79	0.08
	NPA Absent	47	0.98	1.19		
Faint / lightheaded	NPA Present	51	0.49	0.93	1.11	0.27
	NPA Absent	47	0.30	0.78		
Face flushed	NPA Present	51	0.78	1.06	1.04	0.30
	NPA Absent	47	0.57	0.93		
Hot/cold sweats	NPA Present	51	1.51	1.28	0.43	0.67
	NPA Absent	47	1.40	1.16		

t: Student's t test, NPA: Nocturnal panic attack, S.D.: Standard Deviation

precaution-taking behaviors more than non-NPA patients: not remain alone and generally require someone to be with him/her, always taking some medicines with them (in their bag, pocket, purse or car) when going out, keeping addresses of telephone numbers of their homes or spouses, have someone else when sleeping, paying attention to sit near doors in places such as cinema, theatre (p<0.05) (Table 2).

Guarantee Seeking Behavior: When patients with or without NPA are compared according to their responses to 18 questions in guarantee seeking behavior section of panic disorder behavioral changes

Table 2: Avoding-Precaution Taking Behavior

		With NPA		Without NPA		χ^2	S.D.	p
		n	%	n	%			
Having serious concerns about having a somatic disease	a	14	27.5	16	34.0			
	b	1	2.0	0	0	4.99	3	0.17
	c	4	7.8	0	0			
	d	32	62.7	31	66.0			
Not being alone and frequently requiring someone else with him/her	a	15	29.4	28	59.6			
	b	2	3.9	1	2.1	10.04	3	0.02
	c	2	3.9	0	0			
	d	32	62.7	18	38.3			
Carrying always some medicines (in the bag, purse or car) when going out of home	a	18	35.3	31	66.0			
	b	2	3.9	2	4.3	9.73	3	0.02
	c	2	3.9	1	2.1			
	d	29	56.9	13	27.7			
Carrying always an object for good luck	a	41	80.4	41	37.2			
	b	0	0	1	2.1	2.76	3	0.43
	c	1	2.0	1	2.1			
	d	9	17.6	4	8.5			
Carrying the home or spouse's address or phone number	a	29	56.9	33	70.2			
	b	1	2.0	5	10.6	9.37	3	0.03
	c	1	2.0	2	4.3			
	d	20	39.2	7	14.9			
Leaving lights of bedroom open when sleeping	a	28	54.9	26	55.3			
	b	3	5.9	5	10.6	1.67	3	0.64
	c	1	2.0	0	0			
	d	19	37.3	16	34.0			
Leaving door of bedroom open when sleeping	a	23	45.1	23	48.9			
	b	6	11.8	2	4.3	2.94	3	0.40
	c	1	2.0	3	6.4			
	d	21	41.2	19	40.4			
Requiring someone else with him/her while sleeping	a	13	25.5	28	59.6			
	b	1	2.0	0	0	12.21	3	<0.01
	c	3	5.9	2	4.3			
	d	34	66.7	17	36.2			
Pay attention to sit at locations close to the door at cinemas, theatres etc	a	24	47.1	34	72.3			
	b	0	0	0	0	6.47	2	0.04
	c	2	3.9	1	2.1			
	d	25	49.0	12	25.5			
Always eating something before going out	a	37	72.5	39	83.0			
	b	1	2.0	1	2.1	2.21	3	0.53
	c	1	2.0	0	0			
	d	12	23.5	7	14.9			
Not putting on valauble jewelry for not being stolen due to anxiety of fainting and loss of consciousness	a	41	80.4	38	80.9			
	b	0	0	1	2.1	2.49	3	0.48
	c	0	0	1	2.1			
	d	10	19.6	7	14.9			

χ^2: Chi square test, NPA: Nocturnal panic attack, S.D.: serbestlik derecesi

questionairre, it was observed that NPA patients need more relief and guarantee for "not being exposed to something" by their friends and spouses (χ^2=9.9, p=0.02) and they would more like to learn whether there is hospital or pharmacy nearby when they go outside their homes (χ^2=9.7, p=0.02).

DISCUSSION

Nocturnal panic attack is a clinical condition frequently seen among panic disorder patients; however, its exact meaning and importance has not been fully understood yet. Some studies reported that nocturnal panic disorder point out a more severe disease course. It was suggested that nocturnal panic attack is a separate syndrome or disorder and has specific etiological, psychopathological and biological tracts involved (24). Norton et al. (3) found no difference between age and age of disease onset when comparing cases with or without nocturnal panic attacks. These findings are similar to findings of our study.

When gender is considered, panic disorder is seen in women more than men (2). Women make up the majority in both NPA (84.3%) and non-NPA (70.2%) groups. Female/male ratio which we found in our study is consistent with the ratio reported by Briggs et al. (25) which is 62%/38%. In multinational panic disorder studies covering 1168 patients, 62% of patients were women and 38% were men (25). In our study, we found statistically significant difference for educational level between groups with and without nocturnal panic attacks. Panic disorder patients with nocturnal panic attacks were found to be less educated. In two studies done in 2007 and 2008, no significant difference was found for educational level (11,13).

There were more unemployed patients in NPA group. Besides this, most of the patients included in the study were housewives and had low socio-economical status. This may be due to status of our hospital which mainly serves people of low socio-economical status. It was reported that low socio-economical level causes tendency to develop panic disorder and people from low socio-economical level are at higher risk of exposure to stressful life events which are thought to play role in etiology of panic disorder (26). Socio-demographic information from our study support the higher prevalence of panic disorder in groups with low socio-economical status. However, there is need for a broader research for this claim.

Data from several studies about prevalence of NPA point out a wide range of distribution between 18%

and 69% (5, 27-30). The figure we found in our study (47.9%) falls within the wide range found in other studies. On the other hand, it was proposed that separation anxiety occurred in childhood, real loss and separations experienced may have a role in etiology. In their study, Tweed et al. (31) showed that in people who lost their mothers or separated from their families under 10 years old, risk of panic disorder increased. Different researchers reported that separation from either mother or father due to death or other reasons is strongly correlated with a poorer disease course (32). However, in our study no significant difference was found between groups for parental loss, separation of parents, fear of school, separation anxiety and suicidal attempt. Also in some studies, it was found that patients with a history of nocturnal panic attack experienced more anxiety in their childhood and have worse general health than people having only daytime panic attacks (33). However, not being concluded the same result in this study may be due to obtaining childhood history by personal statements and remembering difficulties. People might not have shared their childhood difficulties because researchers were not their original physicians in charge. Follow-up studies are needed to conclude clearer results in this area.

It was proposed that panic disorder often occur after a loss or stress and these life events may trigger onset of the disease (34). It was reported that 64% of PD patients experience negative events in the previous year of disease onset and this rate was reported 35% in the control group. It was proposed that people from low socio-economical status are exposed to stress more, more severely and in longer periods of time (35,36). Our finding of not detecting difference between groups regarding stressor events in the previous year is not consistent with the literature. However, detecting more stressor events only in the previous month supports literature.

When time of attack in NPA group was assessed, it was observed that attacks were mostly at 03.00 A.M. (28%), secondly at 02.00 A.M. (10%) and thidly at 04.00 A.M. (5%). Thus, it can be proposed that nocturnal panic attack is most frequently seen in the first hours of night. Likewise, 18% of panic attacks reported in the

literature occurred between 01.30 and 03.30 while sleeping (37) and this is consistent with our findings. Craske et al. (38) showed that PD patients with regular nocturnal panic attacks represent the most severe end of the spectrum and sleep disturbances are observed more in these patients than patients without nocturnal panic attacks. In our study, similarly, group with nocturnal panic attacks had more difficulties in falling asleep, maintaining sleep and woke up tired more than the group without nocturnal panic attacks. Also, group with NPA avoid sleeping and lying down alone more than the group without NPA. Impairment in sleep quality may exert negative effects on clinical manifestations (38-40). Likewise, it was proposed that there may be secondary early anxiety and avoidance behavior in people with NPA like agoraphobia in patients with daytime panic attacks (41). It was proposed that once a person had NPA, a conditioned fear of sleeping may develop and this may accelerate daytime and nocturnal panic attacks which will intensify fear and avoidance behaviors (41). Moreover, low sleep adequacy, low total sleep duration, high middle and late insomnia and weak subjective sleep and waking quality were observed in these patients (42). In a study done in Turkey, it was reported that repetitive NPA may cause insomnia in patients with PD (4). These findings are similar to ours. Same investigators also found higher prevalence of major depression in PD patients with NPA compared to without NPA and concluded that NPAs may increase disease severity and contribute to high risk of suicide (4). This finding is consistent with results of other investigators whom reported a more severe disease course in people with NPA compared to without NPA (4,5,13,14). In our study, people with NPA scored higher at PAS and HAM-D scales compared to people without NPA. There are several studies in the literature with similar results (4,5,13,14.) Also, no significant differences were detected regarding Beck Anxiety Scale total scores but when anxiety symptoms were evaluated separately, statistically significant differences were found for numbness, fear of worst happening, palpitation, loss of balance, shaky/unsteady, fear of dying, feeling afraid and feeling of choking. In NPA group, these symptoms were found to be more severe. Similar findings were also reported in

the study of Craske and Barlow (15). Craske and Barlow found that people with a history of NPA reported twice more diurnal attacks than people without NPA and attacks were reported to be more severe especially for levels of chest pain or discomfort and nausea. Also, more people with NPA reported choking and drowning sensations. It was reported that more people from NPA group experienced palpitations, pulse disruption, loss of pulsation, pressure/tightening on chest and farting/symptoms of farting. Norton et al. (3) found that number of symptoms in people with NPA are higher compared to group without NPA and people with NPA experienced more chest pain during daytime panic attack.

Other important findings found in our study were analyzed under behavioral changes topic and sub-topics of avoidance behavior, guarantee seeking behavior and precaution taking behavior. Patients with nocturnal panic attacks more frequently reported that they take precautions when going out such as keeping some medicines, addresses or phone numbers of their homes or spouses with them (in their bags, pockets, purses or cars).

In the literature, it was reported that PD cases do not report their carrying "security objects" in order to cope with expectation anxiety as a complaint (8). These objects which are always carried and give "confidence" to patients are thought to have symbolic meanings. It is noteworthy that this is similar to small children who carry some of their toys or blankets always with them and become anxious when separated from them (8).

In our study, NPA patients reported that they need to be relieved and convinced by their friends and family members that "nothing bad will happen" and, to be given guarantee; they try to learn whether there is a doctor, hospital or pharmacy nearby when they go outside their homes more than patients without NPA. This result is consistent with the finding from literature that PD patients tend to dramatize disease symptoms, perform tricky behaviors and act roles to achieve their goals in order to obtain the guarantee they need (30). Patients try to achieve the guarantee they seek by frequently going to emergency departments, frequent medical examinations and even being friends with physicians (30,43). Many patients with panic disorder seek help from their families, friends, neighbours and

physicians to cope with their low self-confidences. Higher number of symptoms in NPA group than group of panic disorder without NPA suggests a more severe disease course.

One of the most important limitations of the study is not evaluating sleep by polysomnography and evaluating NPA according to patient's statement only. Other limitations are not avoiding exaggeration and possible difficulties when remembering symptoms due to retrospective examination, separation anixety, not discussing life events and triggering stressors deeply.

CONCLUSION

Group with nocturnal panic attacks experienced more difficulties in falling asleep and maintaining sleep, more waking up tired and impairment in sleep quality than the group without NPA and these had a negative impact on clinical symptoms. For this reason, taking these characteristics into consideration in treatment of patients with NPA is quite important during course of treatment in clinical practice. Moreover, higher incidence of precaution-taking behaviors in NPA patients compared to daytime panic disorder patients suggest a separate subtype of panic disorder. Longitudinal studies focusing on this subject will help to clarify whether NPA patients belong to a different sub-group of panic disorder or not.

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