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ORIGINAL ARTICLE

Acute Pain Perception in Patients with Psychogenic Non-Epileptic Seizures and its Relationship with Mood Disorders

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Abstract

Objectives: It has been found that pain response is higher in patients with depression and anxiety and also found higher in the patients with psychogenic non-epileptic seizures (PNES). However, these studies are limited in number and they are mainly focused on the chronic pain perception. We aimed to investigate anxiety and depression levels and the perception of acute pain along with childhood traumas among the patients with PNES.

Methods: In our study, a total of 100 gender- and age-matched patients with PNES and 50 healthy controls were included in the study. The beck depression inventory (BDI), the beck anxiety inventory (BAI), and the childhood trauma questionnaire-28 were applied to all the participants. Pain perception was also evaluated by applying gradually increasing pressure with tension cuff while the participants were in a seated position. While the tension was about 180 mmHg, the participants were asked to evaluate their pain using the visual analog scale (VAS).

Results: The major findings of our study are as follows: (i) The BDI and BAI scores were significantly higher in the PNES group than in the control group; (ii) VAS scores were significantly higher in the PNES group than in the control group; and (iii) among the PNES group, BAI scores were correlated with VAS scores.

Conclusion: PNES is experienced by a heterogeneous patient group, and its underlying factors are still not well described. Depression and anxiety are common accompanying factors, and the pain response is higher in patients with PNES with high anxiety levels.

Keywords: Anxiety; depression; pain perception; psychogenic non-epileptic seizures.

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Introduction

Psychogenic non-epileptic seizures (PNES) are one of the common referral reasons in epilepsy centers.[1,2] They can be defined as paroxysmal attacks of alterations in responsiveness, movements, or behavior that can mimic epileptic seizures. However, they lack a biological origin and are not associated with electrophysiological epileptic changes.[3–5]

This clinical phenomenon has been a topic of interest to clinicians for many years. Several potentially interacting factors have been identified, such as mood disorders of depression and anxiety and childhood traumas.[1,2,5]

It has been found that pain response is higher in patients with depression and anxiety.[6] However, these studies are limited in number and they are mainly focused on the chronic pain perception. There is also a reportedly higher incidence of depression and anxiety in patients with PNES.[5] In light of these data, we aimed to investigate anxiety and depression levels and the perception of acute pain along with childhood traumas among the patients with PNES.

Materials and Methods

Subject– In our study, a total of 100 gender- and age-matched patients with PNES (n=100) and 50 healthy controls (n=50) were included in the study. Patients were diag-

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Psikojenik Nonepileptik Nöbetleri Olan Hastalarda Akut Ağrı Algısı ve Duygudurum Bozuklukları ile İlişkisi

Öz

Amaç: Depresyon ve anksiyete hastalarında ağrı cevabının daha yüksek olduğu gösterilmiştir. Psikojenik epileptik olmayan nöbetleri (PNES) olan hastalarda da yüksek ağrı yanıtları olduğu bildirilmiştir. Bununla birlikte, bu çalışmalar sayıca sınırlıdır ve esas olarak kronik ağrı algısına odaklanmıştır. Çalışmamızda, PNES hastalarında çocukluk travmaları ile birlikte anksiyete ve depresyon düzeylerini ve akut ağrı algısını araştırmayı amaçladık.

Gereç ve Yöntem: Çalışmamıza toplam 100 cinsiyet ve yaş uyumlu PNES hastası ve 50 sağlıklı kontrol dahil edildi. Tüm katılımcılara Beck Depresyon Envanteri (BDI), Beck Anksiyete Envanteri (BAI) ve Çocukluk Çağı Travma Anketi (CTQ-28) uygulandı. Ağrı algısı da katılımcılar oturmuş pozisyondayken tansiyon manşetiyle giderek artan basınç uygulanarak değerlendirildi. Gerilim yaklaşık 180 mmHg iken katılımcılardan ağrılarını görsel analog skala (VAS) kullanarak değerlendirmeleri istendi.

Bulgular: Çalışmamızın başlıca bulguları şöyledir: (i) BDI ve BAI skorları PNES grubunda kontrol grubuna göre anlamlı derecede yüksek saptanmıştır; (ii) VAS skorları PNES grubunda kontrol grubuna göre anlamlı derecede yüksek tespit edilmiştir; ve (iii) PNES grubu arasında BAI skorları VAS skorları ile korele saptanmıştır.

Sonuç: Depresyon ve anksiyete PNES'e eşlik eden komorbiditelerdir. Yüksek anksiyete düzeyine sahip PNES hastalarında ağrı yanıtı daha yüksek saptanmıştır.

Anahtar sözcükler: Ağrı algısı; anksiyete; depresyon; psikojenik epileptik olmayan nöbetler.

nosed with PNES and included in the study if they fulfilled all of the following criteria: Age >18 years and having paroxysmal behavioral or motor symptoms with no accompanying electroencephalographic feature. The attacks of the patients were confirmed by home-recorded videos. Patients who had been using painkillers regularly and who had a diagnosis of chronic pain were excluded from the study.

The institutional review board committee of Cerrahpasa faculty of medicine approved this study. We received written informed patient consent to perform this study.

Properties of seizures such as age of seizure onset, triggering factors, accompanying motor movements, intensive care unit hospitalization, and treatments of the patients were also recorded for the PNES group (Table 1).

The beck depression ınventory (BDI), the beck anxiety ınventory (BAI), and the childhood trauma questionnaire 28 (CTQ-28) were applied to all the participants.

Methods– The BDI is a self-report inventory that measures the characteristic attitudes and symptoms of depression.[7] It constitutes 21 items with a value of 0–3, assigned for each answer, and the total score is formed. The total score is evaluated as follows: 0–9, minimal depression; 10–18, mild depression; 19–29, moderate depression; and 30–63, severe depression. Higher total scores correlate with more severe depressive symptoms.

The BAI is also a self-report scale that measures anxiety.[8] It consists of 21 items with a total of 0–63 points. The BAI scores are classified as minimal anxiety (0–7), mild anxiety (8–15), moderate anxiety (16–25), and severe anxiety (30–63). Higher total scores correlate with more severe anxiety symptoms.

In our study, each participant was evaluated with an individual score rather than grouped as minimal or mild-moderate or severe for both BDI and BAI.

The CTQ-28 is a five-point self-report scale developed by Bernstein et al.[9] The scale items, divided into five subscales as emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect, are scored between 1 and 5. In the adaptation, regarding the validity and reliability of the 28-question form of the scale in the Turkish version, the score above 5 for sexual and physical abuse, above 7 for physical neglect and emotional abuse, above 12 for emotional neglect, and above 35 for total score are indicated as the cutoff points.[10]

Pain perception was also evaluated by applying gradually increasing pressure with tension cuff while the participants were in a seated position. While the tension was about 180 mmHg, the participants were asked to evaluate their pain using the visual analog scale (VAS).

Statistical analysis– Data analysis was performed using Statistical Package for the Social Sciences version 20. For the numeric variables, three groups were compared using Kruskal-Wallis test. Post hoc analysis was performed using Mann-Whitney U-test when the distribution of data was non-normal and t test for independent, normally distributed

Table 1. Demographical findings of the participants

	PNES group (n=100)	Control group (n=50)
Age (mean)	29.7±3.5	27.4±2.0
Gender (female/male)	78/22	31/19
Age at seizure onset (mean)	16.2±5.5	–
Duration of epilepsy (year)	8.2±3.4	–
Accompanying motor movements (%)	73	–
Seizure-associated intensive care unit hospitalization (%)	0	–
Treatment (Antiep./Antidep./Other/None)	23/36/9/32	–

Antiep.: Antiepileptic drugs, Antidep.: Antidepressant drugs, PNES: Psychogenic non-epileptic seizures.

variables. Categorical variables were compared using Chi-square test. P<0.05 was considered as statistically significant.

Age, gender, age at seizure onset, duration of epilepsy, triggering factors, accompanying motor movements, seizure-associated intensive care unit hospitalization, and treatments were the parameters taken into account during the statistical assessment.

Results

The mean BDI and BAI scores were significantly higher in the PNES group than in the control group (22.7±5.8 vs. 6.2±3.9 and 27.2±9.5 vs. 5.9±1.6, respectively). The total CTQ-28 score and all its five subscale scores did not differ significantly between the PNES and control groups (total CTQ-28 score, 28.2±4.5 vs. 27.9±3.6; childhood sexual abuse score, 3.4±0.5 vs. 3.2±0.7; mean childhood physical abuse score, 4.2±0.4 vs. 4.4±0.6; childhood emotional abuse score, 5.3±0.3 vs. 5.6±0.5; childhood emotional neglect score, 9.6±0.5 vs. 10.1±0.6; and childhood physical neglect score, 6.2±0.5 vs. 5.8±0.6).

There was no significant relationship among the BDI, BAI, and CTQ-28 scores in both the groups. The VAS scores were significantly increased in the PNES group compared with the control group (8.2±0.8 vs. 4.8±1.1).

Among the PNES group, the BAI scores significantly correlate with the VAS scores (r=0.564, p<0.05). However, no correlation was found between the VAS scores and the BDI and CTQ-28 scores.

The mean age of the patients with PNES was 29.7±3.5, whereas it was 27.4±2.0 in the healthy control group. In the patient group, 78 participants were female and 22 were male (78% and 22%, respectively). In the control group, 31 participants were female and 19 were male (62% and 38%, respectively).

The mean age at seizure onset was 16.2±5.5, whereas the mean duration of epilepsy was 8.2±3.4 years. In 68% of the patients, there were triggering factors and emotional stress, range, and insomnia were the top three reasons. In 73% of the patients, there were accompanying motor movements during the PNES attack. None of our patients had a seizure-associated intensive care unit hospitalization (0%). The treatments of the patients were subcategorized into the following: Antiepileptics, antidepressants, and other. A total of 23% of the patients were using antiepileptics, 36% antidepressants, and 9% other medical drugs. A total of 32% of the patients were medication free.

The BDI scores were significantly higher in the females than in the males in the PNES group. Nevertheless, there was no significant difference in terms of gender distribution in the BAI and CTQ-28 scores in the PNES group.

There was also no significant relationship between age, age at seizure onset, duration of epilepsy, triggering factors, accompanying motor movements, seizure-associated intensive care unit hospitalization, and treatments and the results of the mood inventories or pain perception measurements.

Discussion

The major findings of our study are as follows: (i) The BDI and BAI scores were significantly higher in the PNES group than in the control group; (ii) the CTQ score and that of its subscales were not significantly different between the PNES and control groups; (iii) VAS scores were significantly higher in the PNES group than in the control group; and (iv) among the PNES group, BAI scores were correlated with VAS scores.

PNES-associated factors and comorbidities are not apparent in the literature, and it is not clearly indicated why a person has a PNES attack. In most patients with PNES, several potentially interacting factors can be identified.

Even if a factor appears to have played a dominant role in a particular patient, other factors are likely to contribute.[2,11] The etiological circumstances can be subdivided into the following three headlines in these heterogeneous population: perpetuating factors (e.g., anger, anxiety, and depression); precipitating factors (e.g., rape, injury, death of or separation from family members or friends, job loss, natural disasters, and relationship difficulties); and neurobiological origin.[2,12,13] Among the perpetuating factors, anxiety and depression have been reported to have a relatively higher incidence in the patients with PNES in the literature.[11,12,14,15] Our finding of higher BDI and BAI scores in the patients are consistent with these data. Furthermore, it is revealed in the literature that there is a higher incidence of PNES among the individuals who had a history of childhood trauma.[11,12,14] Nevertheless, our results do not confirm to these findings. In our study, there was no significant difference in any of the childhood trauma subscales. We interpreted this situation under two headings. First, although the CTQ-28 itself has been found to be effective and sufficient to scan childhood traumas, it is generally difficult to uncover such traumas out of a single questionnaire with a single interview at the outpatient clinic. Second, this result could be a consequence of the population difference. In the Turkish society, especially in the female population, marriage at the peripubertal ages and living with the husband's family are common social paradigms. We believe that marital problems could be the leading precipitating factor rather than childhood trauma in the Turkish population.

Pain can be defined as an unpleasant sensorial or emotional experience due to tissue damage.[14] Although the pain perception physiology and the nociceptive pathways are well described, it has been found that pain perception could be subjective to sex, age, sociocultural factors, and mood disorders.[16–18] In light of these data, it is now accepted as a biopsychosocial model rather than a simple nociceptive network. The significant role of mood and emotions for pain perception has also been found, and among these, depression and anxiety have been implicated as important contributors to the experience of pain.[19,20] In particular, it has been found that individuals who have high anxiety levels and depressive symptoms have a tendency to suffer from chronic pain.[21,22] In this study, we examined the condition of acute pain perception and found that the VAS scores were significantly higher in the PNES group than in the control group and that the pain response was higher in individuals with PNES with high anxiety levels. The coexistence of pain and anxiety among the patients with PNES may not be surprising; both indicate the approaching danger and the need for action that gives the individual survival value. We interpreted that this coexistence could support the neurobiological origin of PNES.

There are certain limitations of our study. First, the diagnosis of PNES was not confirmed by video electroencephalography monitoring. Our diagnoses were based on the anamnesis and home videos of the patients. Second, only acute pain perception in the individuals was evaluated and no comparison with chronic pain was done.

Conclusion– PNES is experienced by a heterogeneous patient group, and its underlying factors are still not well described. Depression and anxiety are common accompanying factors, and the pain response is higher in patients with PNES with high anxiety levels. This data could support the existence of the neurobiological origin of PNES.

Informed Consent– Written informed consent was obtained from patients who participated in this study.

Ethics Committee Approval– This study was approved by the Cerrahpaşa University Faculty of Medicine Clinical Research Ethics Committee (Date: 05.06.2018, Decision No: 3963).

Peer-review– Externally peer-reviewed.

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