



Psychogenic non-epileptic seizures in Iran



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ARTICLE INFO

Article history:

Received 16 July 2013

Received in revised form 23 October 2013

Accepted 8 November 2013

Keywords:

Psychogenic non-epileptic seizures
Manifestations
Iran

ABSTRACT

Purpose: We investigated the demographic and clinical characteristics of psychogenic non-epileptic seizures (PNES) in patients in Iran.

Methods: In this prospective study, all patients with a clinical diagnosis of PNES (based on ictal recordings) were recruited at the outpatient epilepsy clinic at Shiraz University of Medical Sciences, from 2008 through 2013. The epileptologist interviewed all the patients. We investigated the demographic and clinical characteristics of PNES.

Results: Two hundred and forty-nine patients were diagnosed as having PNES. Two hundred and eleven patients had video-EEG recordings available and included in the study. One hundred and forty-one (66.8%) were female and 70 (33.2%) were male. There were no significant differences between our patients and previous reports regarding the clinical and semiological characteristics of PNES.

Conclusion: Psychogenic non-epileptic seizures are relatively common at epilepsy clinics. It appears that an Islamic lifestyle (in Iran) has little influence on the clinical characteristics and manifestations of PNES, as we observed similar results as in most previous studies from other cultures.

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1. Introduction

Psychogenic non-epileptic seizures (PNES) are relatively common at epilepsy clinics.^{1,2} These seizures consist of paroxysmal changes in consciousness, movements, or behavior that are similar to epileptic seizures, but do not have a neurological origin and are not associated with electrophysiological epileptic changes.^{3–6} PNES tend to begin in young adulthood, although the seizures can occur in a wide range of ages.^{1,7} There is a dominance of the female gender.^{6–8}

In the current study, we investigated the demographic and clinical characteristics and associated factors of PNES in Iran. We hypothesized that there would be differences between patients in Iran and those in the Western studies due to an Islamic, Middle-eastern lifestyle (in Iran).

2. Methods and material

In this prospective study, all patients with PNES were recruited at the outpatient epilepsy clinic at Shiraz University of Medical Sciences, from September 2008 through June 2013. The diagnosis

was made by clinical assessment and a 2-h video-EEG monitoring with standard 10–20 electrodes and additional T1 and T2 electrodes. We routinely perform verbal suggestion to induce probable PNES in all patients. Toward the end of the recording session and 3 min after the photic stimulation, we ask the patient that we have to see her/his seizures, while under video-EEG monitoring, to ascertain the diagnosis and help her/him more efficiently and appropriately. At the time of interpretation of the recorded video-EEG monitoring, we reviewed the video with the relatives or care-givers to make sure that we captured the patient's habitual seizures. We always obtain a detailed clinical history in order to investigate for any possible concomitant epileptic disorders in patients with PNES (e.g., presence of other seizure types, different from what we captured during the video-EEG monitoring, if their description is compatible with epileptic seizures). We also review the recorded EEG carefully to search for any possible epileptiform discharges.

The epileptologist interviewed all the patients and if they agreed to share their information in the study, it was used. All the data were kept confidential. Age, gender, education, age at seizure onset, seizure semiology, seizure frequency, factors potentially predisposing to PNES [history of physical abuse (corporal punishment or any physical injury resulted from aggressive behavior toward the patient), sexual abuse (rape), child abuse (neglect or physical abuse), academic failure, head injury, any medical comorbidities, and family history of epilepsy], and video-EEG recording of all patients were registered routinely. Extramarital sex is forbidden by law and religion in our country and people

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might deny being physically or sexually abused due to family considerations. In our experience, taking additional history in private might help overcome this problem to some extent. Demographic variables and relevant clinical variables were summarized descriptively to characterize the study population. This study was conducted with the approval by Shiraz University of Medical Sciences Review Board.

3. Results

During the study period, 3034 patients were registered at our epilepsy clinic. Two hundred and forty-nine patients (8.2%) were diagnosed as having PNES. Two hundred and eleven patients had video-EEG recordings available and included in the study. One hundred and forty-one patients (66.8%) were female and 70 (33.2%) were male. The mean age (\pm standard deviation) at the time of referral was 28.7 years (\pm 9.7). The minimum age was 12 years and the maximum age was 71 years. The mean age (\pm standard deviation) at seizure onset was 23.2 years (\pm 10.2). The minimum age of onset was five years and the maximum age was 69 years. Duration of the illness before reaching the diagnosis of PNES was 5.5 ± 7.6 years. Minimum duration of the disease was one month and maximum duration was 35 years. One hundred and seven patients (50.7%) had education below diploma (did not graduate from high school), 53 people (25.1%) had diploma and 36 (17.1%) had university education. Education information was not available in 15 patients. One hundred and eight patients (51.2%) were married, 95 (45%) were single, five patients (2.4%) were divorced, and three (1.4%) were widowed. At referral, 73 patients (34.6%) had daily seizures; 47 patients (22.3%) had weekly seizures; and 91 patients (43.1%) had monthly or occasional seizures. One hundred twenty-six patients (59.7%) were taking anti-epileptic drugs (AEDs) at referral (Table 1). As a matter of fact, 49 patients (23.3%) were on polytherapy with AEDs at referral. Duration of taking AEDs before reaching the diagnosis of PNES was 4.6 ± 6.1 years. Minimum duration of taking AEDs was one month and the maximum duration was 30 years. Seizure characteristics and semiology among patients with PNES are summarized in Table 2. One hundred and thirty-three patients reported having auras. The most common types of aura were: non-specific and vague sensory feelings in 31 (14.7%), headache in 25 (11.8%), and dyspnea in 9 (4.3%) patients. Factors potentially predisposing to PNES are summarized in Table 3. Thirty-five patients (16.6%) had confirmed concomitant epilepsy (based on their video-EEG monitoring and detailed clinical history). Eighteen patients had focal epilepsy, 15 had idiopathic (genetic) generalized epilepsy and two had unclassified epilepsy.

4. Discussion

Psychogenic non-epileptic seizures (PNES) are relatively common at epilepsy clinics.^{1,2} It has been reported that from five to ten percent of outpatient epilepsy populations have PNES.⁷ In our study, similar results were observed and 8.2% of the patients referred to our epilepsy clinic had PNES. There was a dominance of the female gender among our patients (female to male ratio = 2: 1), which was similar to previous reports from the Western countries^{9,10} and other developing countries.¹¹ Reasons for this female preponderance are not entirely clear. However, in a

Table 1
Patients with PNES, who were taking antiepileptic drugs (AED) at referral.

	Number of patients taking AED (%)	Number of patients not taking AED (%)
PNES and epilepsy	31 (88.5%)	4 (11.5%)
PNES only	95 (54%)	81 (46%)

PNES: psychogenic non-epileptic seizure.

Table 2
Seizure characteristics and semiology in patients with PNES.

	Number	Percent
Seizure characteristics recorded by video-EEG monitoring and confirmed by eye witnesses		
Side to side head movements	50	23.7%
Violent shaking movements (low frequency, high amplitude)	95	45%
Stiffening (tonic posture)	120	56.9%
Fine shaking movements (high frequency, low amplitude)	122	57.8%
Loss of tone	30	14.2%
Wax and wane movements (intermittent shaking movements with intervals of inactivity)	113	53.6%
Eyes closed	188	89.1%
Seizure characteristics reported by the patients or eye witnesses		
Aura	133	63%
Loss of consciousness	184	87.2%
Urine incontinence	26	12.3%
Fecal incontinence	6	2.8%
Postictal state	167	79.1%
Episodes of pseudostatus	49	23.2%
Ictal injury	65	30.8%
Nocturnal seizures	79	37.4%
Hospital admission	92	43.6%
Intensive care unit (ICU) admission	5	2.4%

Table 3
Associated factors for PNES.

Associated factor	Number	Percent
History of abuse (physical/emotional) as a child	27	12.8%
History of sexual abuse	17	8.1%
History of physical abuse	25	11.8%
History of head trauma	10	4.7%
Academic failure	18	8.5%
Confirmed epilepsy	35	16.6%
Family history of epilepsy	70	33.1%
Medical comorbidity	49	23.2%

previous study from the same clinic, we did not observe any significant demographic differences between women and men with PNES. Likewise, seizure characteristics and semiology were very similar among both genders.⁸ PNES tend to begin in adolescence and young adulthood, although the seizures can occur in a wide range of ages.^{7,11} There are reports about PNES in children¹² and some studies investigated PNES in elderly.¹³ In our study, similar results were observed. It has been reported that there are semiologic differences between childhood PNES compared to that in adults.¹² In a previous study from the same clinic, we observed that age of onset of PNES was not correlated with the clinical manifestations of the disease; however, factors potentially predisposing to PNES were significantly different in patients with juvenile compared to those with adult-onset PNES.¹

Interestingly, it appears that an Islamic lifestyle in Iran (a Muslim, Shia predominantly country, with a moderate form of Sharia law, where for example, extramarital sex is forbidden and women have to wear hijab, etc.) has little influence on the clinical manifestations and semiology of PNES, as we observed similar clinical manifestations and semiology among our patients compared to the Western studies.^{14–16} In another study from a non-Moslem developing country (Brazil), the authors reported that clinical aspects of PNES observed in their patients resembled the currently published literature, suggesting cross-cultural similarities in the clinical expression of PNES.¹¹ In another study from Argentina, more or less, similar results were observed regarding clinical aspects of PNES.¹⁷ Therefore, we believe that religion, cultural differences, economic situation, and even social differ-

ences have little influence on the clinical manifestations and semiology of PNES.

It has been reported that being abused in childhood, either physically or sexually, is very frequent (32–88%) among patients with PNES.¹⁵ Many authors have emphasized the role that child sexual abuse may play in the etiology of PNES.¹⁸ History of childhood abuse (12.8%), physical abuse (11.8%) and sexual abuse (8.1%) were not that common among our patients compared to those in the Western studies.^{15,18} There could be real differences between our series and the others. In other words, these differences might be clinically important and highlights the issue that other psychopathological mechanisms may explain development of PNES in a Muslim culture. However, we believe that, these differences most probably have cultural or religious reasons; as extramarital sex is forbidden by law and religion in our region and people might deny being physically or sexually abused due to family considerations. These differences should be investigated in cross-cultural comparisons in future studies. The probable relations between head injury and PNES and also concomitant epilepsy and PNES have been suggested before.¹⁵ The percentage of patients with concurrent epilepsy has varied from 3.6 to 58% in different series,¹⁵ but it is generally accepted that the prevalence of epilepsy is greater among patients with PNES than in the general population.¹⁵ We observed that, 16.6% of the patients with PNES had concurrent epilepsy. In a previous study at the same center, we observed that having epilepsy or family history of epilepsy were more frequently observed in juvenile PNES.¹ The significance of coexisting chronic medical conditions in patients with PNES has also been emphasized before.⁹ In a previous study at the same center, we observed that medical comorbidities were more frequent among patients with adult-onset PNES.¹

5. Conclusion

It appears that an Islamic lifestyle (in Iran) has little influence on the clinical characteristics (e.g., age of onset, gender differences, etc.) and manifestations of PNES; we observed similar results as in most previous studies from Western and developing countries. It is interesting that the different religion, ethnics and traditions in Iran do not affect the manifestations and most associated factors of PNES significantly (compared with the Western studies). It confirms the cross-cultural similarities in the clinical expression of PNES, as it was suggested before.¹¹ Maybe, we should look more carefully for potential biological abnormalities in patients with PNES. To highlight the potential role of biological abnormalities in PNES, it is interesting to mention that a number of studies have demonstrated an unexpectedly high prevalence of abnormal brain imaging or nonspecific EEG abnormalities in patients with PNES.^{15,19}

Limitations of the study

1. This was a clinic-based series and may not represent the full spectrum of patients with PNES.
2. We did not systematically assess psychiatric disorders.

Conflict of interest

None.

Acknowledgments

We would like to thank the Neurosciences Research Center, Shiraz University of Medical Sciences for supporting this study financially. This study was performed at the same clinic as in our previously published papers,^{1,2,8} but included more patients during longer time period.

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