Characteristics of patients with confirmed epilepsy and psychogenic nonepileptic seizures in Qatar

Stacy Schantz Wilkins [a,*], Boulenouar Mesraoua [a,b], Gonzalo Alarcón Palomo [a,b], Hassan Al Hail [a,b], Abdul Salam [a], Gayane Melikyan [a,b], Nabil Azar [a], Naim Haddad [a,b], Bassim Uthman [a,b], Maria Siddiqi [a], Lubna Elsheikh [a], Musab Ali [a], Abdulraheem Alrabi [a], Ashfaq Shuaib [a], Dirk Deleu [a,b], Ali A. Asadi-Pooya [c,d]

[a] Hamad Medical Corporation, PO Box 3050, Doha, Qatar
[b] Weill Cornell Medicine—Qatar, PO Box 24144, Education City, Doha, Qatar
[c] Neurosciences Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
[d] Department of Neurology, Thomas Jefferson University, Philadelphia, PA, USA

ARTICLE INFO

ABSTRACT

Objective: The Middle Eastern country of Qatar opened its first epilepsy monitoring unit (EMU) in late 2015. This study compared demographic and clinical characteristics of patients with confirmed epilepsy to those of patients with confirmed psychogenic nonepileptic seizures (PNES).

Methods: Data were collected via retrospective chart review on 113 patients admitted for evaluation to the Qatar national health system EMU between November 2015 and May 2017.

Results: Seventy-one patients had a confirmed diagnosis (20 had PNES, 46 had epilepsy, 5 had both PNES and epilepsy). Evaluation in 33 patients was inconclusive, and 9 had other medical conditions. Patients with PNES were significantly more likely to be primary Arabic speakers (p = 0.003), and this difference was not explained by education or employment status. The most common referral request in patients with PNES was for recurrent/refractory seizures (p = 0.011), and there was a trend for patients with PNES to have more frequent seizures compared with patients with epilepsy (daily to several per week versus several times a month or less, p = 0.051). Depression was identified in 47% of patients with epilepsy and 65% of patients with PNES, and patients with PNES had higher mean depression scores on the PHQ-9 than patients with epilepsy (p = 0.014). Patients with PNES experienced significantly more fatigue (p = 0.021). Seventy percent of patients with PNES and 50% of patients with epilepsy reported sleep problems.

Conclusions: The characteristics of patients with epilepsy and PNES at the EMU in Qatar were generally similar to those found worldwide. Patients with PNES more often suffered from frequent depression, sleep problems, and fatigue than those with epilepsy, but these were significant concerns for both groups.

1. Introduction

The Middle Eastern country of Qatar opened its first epilepsy monitoring unit (EMU) in late 2015. Few studies have evaluated patients with epilepsy and psychogenic nonepileptic seizure (PNES) on EMUs in the Middle Eastern region [1–3]. This study compared demographic and clinical characteristics between patients with confirmed epilepsy and those with PNES.

Approximately sixty million people worldwide have epilepsy, making it one of the most common neurological disorders globally [4].

The annual incidence of epilepsy in Qatar from 1992 to 2000 was postulated to be 174 per 100,000 [5], a high figure compared with other regions. People with epilepsy respond to medication treatment (antiepileptic drugs) approximately two-thirds of the time. Those whose seizures do not respond to medications are often referred to an EMU for diagnostic clarification and consideration for potential epilepsy surgery.

Psychogenic nonepileptic seizures involve paroxysmal changes in responsiveness, movements, or behaviors that superficially resemble epileptic seizures, but are not associated with electrophysiological epileptic changes [6]. Differentiating PNES from epilepsy is a common reason for referral to the EMU. About 10–40% of patients admitted for long-term video-EEG monitoring are diagnosed as having PNES [7].

* Corresponding author at: Academic Health, Neuroscience Institute, Hamad Medical Corporation, PO Box 3050, Doha, Qatar.
E-mail address: stacywilkins77@va.gov (S.S. Wilkins).

Given the newly opened EMU in Qatar, our objective was to compare demographic and clinical characteristics of patients with epilepsy with those with PNES in order to better define our patient population and provide optimal care and treatment.

2. Material and methods

All patients admitted to the EMU at Hamad General Hospital (HGH) from November 2015 to May 2017 were included in the study. The HGH is a Joint Commission International (JCI) accredited 600-bed hospital, and serves as the teaching hospital for Weill Cornell Medical College in Qatar.

Assessment of patients in the EMU included 24-hour video-EEG monitoring using the 10–20 international electrode placement system, a complete neurological examination, neuroimaging (if necessary and typically brain MRI) and routine laboratory assessments (if necessary), and bedside neuropsychological screening. The diagnosis of epilepsy or PNES was made based on the clinical history and the recorded typical events and their correlation with the electroencephalogram (EEG) findings. All EMU data and final diagnosis were confirmed by two epileptologists.

Demographic and clinical characteristics of patients with epilepsy and those with PNES were compared. Demographic and clinical information was collected via a retrospective chart review. Seizure frequency was reported for the six months prior to admission to the EMU, and collected from the chart based on interviews of the patient and their family and their neurologist's notes. The following data were collected: demographics (age, sex, marital status, education, work/student status, and primary language), reason for EMU referral, time since onset, seizure type and frequency, risk factors for seizure, family history of seizure and PNES, and antiepileptic drug (AED) use. We also collected data from the Patient Health Questionnaire (PHQ-9) depression screening, generalized anxiety disorder scale (GAD-7) score, and Montreal Cognitive Assessment (MoCA) score [8–10]. All patients were seen by a licensed clinical psychologist for a clinical interview of current mood and cognitive concerns and administered the PHQ-9, GAD-7, and MoCA in their first language. Symptoms of depression were reviewed in an interview conducted by a licensed clinical psychologist based on Diagnostic and Statistical Manual 5 symptoms [11]. Depression was determined to be present if patients endorsed either depressed mood and/or anhedonia/loss of pleasure and had a total score of 10 or more on the PHQ-9 depression scale (moderate range or greater).

The study was reviewed and approved by the Hamad Medical Corporation Research Internal Review Board, study protocol #17164. Since it was a retrospective study, patients did not need to sign a consent form.

2.1. Statistical analysis

Continuous data were expressed by mean ± standard deviation (SD) and categorical data as frequency (%). Continuous variables were compared with independent sample t-test or with the Mann–Whitney U test depending on whether the distribution was Gaussian or not. Categorical data were compared with a Pearson chi-square test or with a Fisher exact test whenever appropriate. Multiple comparison test was performed using Bonferroni correction for assessing the relationship between reason for referral and patients with epilepsy and those with PNES. Binary logistic regression analysis was performed to measure the odds ratio and 95% confidence interval to assess the relationship between patients endorsing each PHQ-9 symptom more than half the days or every day with epilepsy and PNES. Statistical analyses were performed using SPSS version 22. A two-sided p value < 0.05 was considered statistically significant.

3. Results

A total of 113 patients were admitted to the EMU in Qatar during the study period. Confirmed diagnosis was found in 71 patients, 46 of whom had epilepsy, 20 had PNES, and five patients had both PNES and epilepsy. Out of the remaining patients, 33 patients had inconclusive EMU studies with no recorded typical events, and 9 were found to have other nonneurological conditions.

We compared the clinical and demographic characteristics between patients with epilepsy and those with PNES (Table 1).

Patients with PNES were significantly more likely to be primary Arabic speakers (p = 0.003), and this difference was not explained by education or employment status. Groups were too small to compare nationality, though those from the Middle East and North African (MENA) region were compared with those from other areas. Of the 20 patients with PNES, 11 were Qatari, 2 Egyptian, 1 Jordanian, 1 Moroccan, 1 Yemeni, 1 Tunisian, 1 Sudanese, 1 Indian, and 1 Pakistani. Of the 46 patients with epilepsy, 14 were Qatari, 4 Egyptian, 4 Indian, 3 Jordanian, 3 Yemeni, 3 Sudanese, 3 UK/Canadian, 3 Pakistani, 2 Algerian, 2 Sri Lankan, and 1 each for French, Palestinian, Somalian, Filipino, and Libyan.

Patients with PNES were significantly less likely to be taking antiepileptic drugs (AEDs) prior to their admission to the EMU, their most

Table 1
Characteristics of patients with epilepsy and those with PNES.

	Epilepsy (n = 46)	PNES (n = 20)	p value
Age (mean ± SD)	28.04 ± 13.32	24.5 ± 8.38	0.277¥
Gender (% by diagnosis)			0.125£
Female	16 (34.8)	11 (55)	
Male	30 (65.2)	9 (45)	
Nationality (%)			
MENA	32 (69.6)	18 (90)	0.174€
Other	14 (30.4)	2 (10)	
Primary language (%)			
Arabic	27 (58.7)	19 (95)	0.003£
English/Indian/other	19 (41.3)	1 (5)	
Reason for referral (%)π			
Surgical evaluation	4/4 (8.7)	0/4 (0)	0.011€
Recurrent/refractory seizure	6/15 (13.0)	9/15 (45)	
Seizure evaluation	36/47 (78.3)	11/47 (55)	
Time since seizure onset (years)	8.19 ± 6.77	5.37 ± 8.26	0.247¥
Taking AEDs (%)	39/46 (84.7)	11/20 (55)	0.014€
Marital status (%)			
Married	19 (42.2)	5 (26.3)	0.434€
Single	25 (55.6)	13 (68.4)	
Divorced	1 (2.2)	1 (5.3)	
Seizure frequency (6 months prior to admission)			
Daily to several per week	17/37 (45.9)	12/16 (75.0)	0.051£
Several per month or less	20/37 (54.1)	4/16 (25.0)	
Employed/student (%)	33/44 (75)	12/19 (63)	0.340£
Education			
<High school	9/19 (47.4)	12/44 (27.3)	0.12£
≥High school	10/19 (52.6)	32/44 (72.7)	
Depressed (%), moderate or greater score on the PHQ-9	21/45 (47)	13/20 (65)	0.172£
PHQ-9 score (mean ± sd)	9.27 ± 5.95	13.45 ± 6.53	0.014¥
Anxious, GAD-7 score moderate or greater (%)	9/28 (32)	8/15 (53)	0.189β
MoCA score (mean ± sd)	22.46 ± 4.53	21.50 ± 5.12	0.451¥
MoCA recall (%)			
0–2/5	23/46 (50.0)	8/20 (40.0)	0.454£
3–5/5	23/46 (50.0)	12/20 (60.0)	

MENA = Middle Eastern and North African, AED = antiepileptic drug, PHQ-9 = Patient Health Questionnaire (of depression) 9, GAD-7 = Generalized Anxiety Disorder scale–7, MoCA = Montreal Cognitive Assessment; ¥: p-value has been calculated using independent sample t-test; £: p-value has been calculated using Pearson chi-square test; €: p-value has been calculated using Fisher Exact test. β: p-value has been calculated using Mann–Whitney U test; π: Multiple comparison test was performed using Bonferroni correction (surgical evaluation vs. recurrent/refractory seizure; p-value = 0.087: recurrent/refractory seizure vs. seizure evaluation; p-value = 0.008: surgical evaluation vs. seizure evaluation; p-value = 0.565).