Seizure 31 (2015) 144–148

Contents lists available at ScienceDirect

Seizure

journal homepage: www.elsevier.com/locate/yseiz

Semiological and psychiatric characteristics of children with psychogenic nonepileptic seizures: Gender-related differences

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ARTICLE INFO

Article history:
Received 25 May 2015
Received in revised form 21 July 2015
Accepted 23 July 2015

Keywords:
Psychogenic nonepileptic seizures
Children
Gender
Semiology
Psychopathology
ADHD

ABSTRACT

Purpose: To compare semiological characteristics, precipitating stress factors and psychiatric diagnoses of girls and boys with psychogenic nonepileptic seizures (PNESs).
Methods: We retrospectively reviewed medical records of children diagnosed with PNES and who also underwent psychiatric evaluation. Sixty-two children (44 girls, 18 boys), aged 11-18 years (mean age 14.19 ± 1.96 years) were included. Diagnosis of PNES was established by any of the following: (1) observation of the seizure by a neurologist and routine EEG, (2) evaluation of amateur video records of the typical seizure and routine EEG, or (3) video-EEG monitoring. Psychiatric examinations of patients were performed using the Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime Version (KSADS-PL).
Results: Tremor was the most prevalent ictal motor sign in both girls and boys. Atonic falls and longer episodes were significantly more frequent in girls than boys. Tonic–clonic-like movements of the extremities were significantly more prevalent in boys than girls. No gender-specific differences were observed in the rates of semiological types. Academic underachievement was the most prevalent precipitating stressor for boys, and was significantly more prevalent in boys than girls. The rate of major depression was significantly higher in girls than boys. The most prominent diagnosis in boys was attention deficit/hyperactivity disorder, and this was significantly more prevalent than in girls.
Conclusion: PNES in males of juvenile age may be a distinct entity from that in girls with different semiological and psychogenic correlates. Consideration of these gender-related differences may be beneficial for the early recognition and treatment of PNES.

1. Introduction

Psychogenic nonepileptic seizure (PNES) is an observable paroxysmal change in behavior or consciousness that resembles an epileptic seizure, without cortical abnormal electrical discharge, but originating from psychogenic factors [1]. PNES in children is mostly associated with significant impairment in functioning and psychopathology. Recent research has shown that the PNES population is etiologically and experientially heterogeneous [2]. Determination of semiological characteristics and underlying psychogenic factors is beneficial for the accurate recognition and management of PNES. PNES is more commonly seen in females although some authors have described a decrease in female predominance in younger age groups [3]. We think that the results of previous studies of PNES may largely reflect the characteristic of female patients and males with PNES may have distinct semiological and psychiatric features.

The few previous studies of gender-related differences in PNES involved adults as sample groups [4,5]. To the best of our knowledge, no previous studies have investigated gender-related differences in children and adolescents with PNES. The purpose of this study was therefore to compare girls and boys with PNES in terms of semiology, associated stress factors and psychopathology. The main hypothesis of this study was that semiological and psychiatric correlates of PNES in children may vary by gender.

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http://dx.doi.org/10.1016/j.seizure.2015.07.017
1059-1311/

2. Methods

Children diagnosed with PNES and who underwent psychiatric examination between January 2013 and January 2014 were included in this retrospective study. Diagnoses of psychogenic seizures were established by: (1) observation of the seizure by a neurologist and routine sleep/non-sleep EEG ($n = 8$, 12.8%), (2) evaluation of amateur home video records of the typical seizure and routine sleep/non-sleep EEG ($n = 13$, 21%), or (3) video-EEG monitoring ($n = 41$, 66.2%). We think that inclusion of participants diagnosed by video-EEG alone might result in the inclusion of more severe forms of PNES, since this is more commonly used for the diagnostic elucidation of refractory seizures. Our aim was to establish a sample that actually reflected the semiological and psychiatric characteristics of children with PNES in the general population. For these reasons, this study did not include only those patients whose PNES was diagnosed by video-EEG. Patients underwent video-EEG monitoring if one of the following was present: (1) semiological heterogeneity, (2) clinical suspicion of epilepsy, or (3) EEG abnormalities. All of the recorded events and EEGs were analyzed by two experienced child neurologists (H.A.T. and H.İ.) in order to confirm the presence or absence of paroxysmal epileptiform activity and clinical manifestations typical of psychogenic or epileptic seizures. Diagnosis of PNES was based on consensus between the two neurologists. Videotapes or witnessed seizures were also validated by clinical history and were discussed with the parents to confirm that the attacks were typical of the previous seizures. Semiological characteristics of PNES diagnosed by neurologist observation were recorded in detail. Cardiological evaluation was performed in order to rule out syncope if the patient experienced sudden collapses as a manifestation of seizures.

All children diagnosed with PNES were routinely examined by the department of child and adolescent psychiatry for evaluation and treatment of co-existing psychogenic factors. Sociodemographic features and psychosocial difficulties were evaluated routinely using a demographic form inquiring into the history of precipitating stress factors such as relational problems (parental conflicts, or interpersonal problems with siblings, friends and teachers), academic underachievement (low grades, repeating a grade or learning problems), physical/sexual abuse and other traumatizing or stressful life events (separation, parental divorce, migration, death, health problems, or financial problems), and medical history.

Psychiatric examinations were performed using the Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime Version (KSADS-PL) by a child and adolescent psychiatrist (G.N.S.) based on the interviews with adolescents and parents. The KSADS-PL is a semi-structured interview schedule designed to assess psychiatric disorders in children and adolescents on the basis of DSM-IV criteria [7]. The reliability and validity study of KSADS-PL has been established for the Turkish population [8].

We retrospectively reviewed medical records (neurology and psychiatry), amateur video records and video-EEG records of all children diagnosed with PNES. All diagnoses of PNES and psychiatric disorders were completed before this retrospective analysis. The semiology of a typical attack in each patient was analyzed and recorded in detail. The events were classified according to the categories described by Seneviratne et al. [6]; dialeptic type, rhythmic motor, complex motor, hypermotor, subjective or mixed. Written informed consent was obtained from all subjects and their parents. The research was approved by the Ondokuz Mayis University Faculty of Medicine ethical committee.

2.1. Statistical analysis

Data were analyzed using SPSS (SPSS Inc, Chicago, IL). The chi-square test was used to compare girls and boys. A $p < 0.05$ was regarded as statistically significant.

3. Results

3.1. Demographical and medical history data

Sixty-two adolescents aged 11-18 years (mean age 14.19 ± 1.96 years) diagnosed with PNES were included in the study. The study group was composed of 44 girls (71%) and 18 boys (29%). Most patients (61%) were living in urban areas. Mean time from the beginning of the pseudoseizures until diagnosis was 10.23 ± 11.727 months. Co-existing epilepsy was present in 25 (40.3%) patients. Eighteen (29%) subjects had previous psychiatric referrals. Thirty-two (51.6%) patients were receiving antiepileptic drug treatment, and 20% were taking antidepressants. No significant difference was determined between girls and boys in terms of mean age, place of residence, education, socioeconomic status, duration of illness, comorbidity of epilepsy, pharmacological treatment or parental education levels.

3.2. Semiological characteristics

Tremor was the most prevalent ictal motor sign in the entire sample (27.4%) and also in both girls (22.2%) and boys (38.9%). Atonic falls were significantly more prevalent in girls (34%) compared to boys (5.6%). Girls (84%) were significantly more likely than boys (64%) to have seizures continuing longer than 2 min. Tonic–clonic-like movements of the extremities were significantly more frequent in boys (16.7%) than girls (2.3%). Twenty-five (40.3%) participants had one symptom during the event while 23 (37%) of them manifested two symptoms and 14 (22.7%) had more than two symptoms. The frequency of each symptom and comparisons between girls and boys are shown in Table 1.

3.3. Semiological classification

There were no statistically significant differences between girls and boys in terms of semiological types. Distribution of PNES events according to Seneviratne et al.'s classification and comparisons thereof are shown in Table 2.

3.4. Precipitating stress factors

Relational problems with peers were the most frequent stressor for girls (50%) although this was not significantly different to the rate in boys (44.4%). The most frequent stressor for boys was academic underachievement (83%), the rate being significantly higher than in girls (47%). Girls and boys were similar in terms of rates of other psychosocial stress factors (family conflict, relational problems, physical/sexual abuse and stressful/traumatizing life events). Precipitating stress factors are shown in Table 3.

3.5. Psychopathology

The rates of comorbid psychiatric disorders were significantly higher in boys (83.3%) than in girls (56.8%). Major depression was the most prominent psychiatric disorder (31.8%) in girls, the rate in girls being significantly higher than in boys (5.6%). Attention deficit/hyperactivity disorder (61%) and disruptive behavior disorders (33%) were the most frequent diagnoses in boys, and were significantly more prevalent in boys than in girls (9% and 4.5%). Comorbid psychiatric disorders are summarized in Table 4.