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Co-morbidities and outcome of childhood psychogenic non-epileptic seizures––An observational study

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ABSTRACT

Purpose: To assess the psychiatric diagnoses and outcome in children with psychogenic non-epileptic seizures (PNES).
Methodology: This hospital based observational study was performed on 44 children aged <16 years, who suspected to have psychogenic non-epileptic seizures based on video-EEG, from August 2005 to August 2012. The parameters noted were the psychiatric diagnosis, co-morbidities, management assessment and interventions (pharmacological and psychosocial), number and duration of follow-up visits, symptoms at follow-up, functioning as reflected by involvement in the social and scholastic work.
Results: All forty four children completed the evaluation. Thirty four children were diagnosed as having PNES and the underlying psychiatric diagnosis was conversion disorder ($n = 34$, 77.3%). Co-morbid psychiatric disorders were present in 17 children (50%). The common co-morbidities were intellectual disability ($n = 8$, 23.5%), specific learning disorder ($n = 5$, 14.7%), and depression ($n = 5$, 14.7%). Co-morbid epilepsy was present in 8 (23.5%) children and family history of epilepsy was present in 10 (29.4%) cases. About 17 of 34 (50.0%) patients had a minimum follow-up of 6 months (13.9 ± 4.8 months). Twenty six children (76.5%) remained symptom free at the follow-up of 9.8 ± 7 months. The remaining 10 children (22.7%) had non-epileptic seizures with underlying diagnosis of Attention Deficit Hyperactivity Disorder (ADHD), gratification disorder and other physiological conditions.
Conclusions: Conversion disorder is a common diagnosis underlying psychogenic non-epileptic seizures. Outcome was good in 76.5% children with PNES. A multidisciplinary approach is needed in the diagnosis and management of PNES.

1. Introduction

Psychogenic non-epileptic seizures (PNES) are involuntary time limited events that may manifest as motor, sensory or behavioral phenomena resembling true seizures.[1–3] Clinically, when a non-epileptic event is suspected, it is prudent to reassess the clinical history and evaluate for the possible causes of the paroxysmal events like psychiatric problems, migraine, syncope, periodic paralysis, etc.[3,4] Psychogenic non-epileptic seizures are a common morbidity in the pediatric population referred to epilepsy clinics and are often misdiagnosed with epilepsy.[5] Around 20–40% of children evaluated in epilepsy clinics have been reported to have PNES.[6–9] It is often seen as a co-morbid condition in the patients with epilepsy, depression and other psychiatric disorders.[10,11]

Psychogenic non-epileptic seizures, if suspected, need evaluation by a mental health professional for the diagnostic clarification and appropriate management.[12,13] Various psychological factors like anxiety or stress, physical abuse, significant bereavement, family dysfunction, relationship problems, depression, sexual abuse have been identified as important factors in children with PNES.[14] The prognosis of PNES in children is found to be more favorable[15,16] than in the adults although differing rates have been

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reported.[17–19] The outcome in pediatric population varies, possibly owing to differences in the diagnostic guidelines and psychological, social and cultural factors across different regions.

Hence, the aim of this study was to analyze the underlying psychiatric diagnosis in children with psychogenic non-epileptic seizures and to assess the outcome of their illness on follow-up.

2. Patients and methods

This is a retrospective hospital-based observational study, which was carried out in the Departments of Child and Adolescent Psychiatry, Neurology and Psychiatry at the National Institute of Mental Health and Neurosciences (NIMHANS), a tertiary care center in south India for neuropsychiatric disorders. All the patients younger than 16 years, suspected to have PNES on video-EEG monitoring from August 2005 to August 2012 were included in this study. Patients were admitted in the epilepsy-monitoring unit (EMU) either to characterize the undiagnosed event (epileptic vs. NES) or to characterize the semiology of the ictus as a part of the evaluation of drug resistant epilepsy.

The video-EEG data of 44 children, who were suspected to have PNES on VEEG, were retrieved from the server maintaining the records and were reviewed by the two epileptologists (SS, PS) independently. The differences in the interpretation of PNES attacks between the two reviewers were sorted out after the discussion. The criteria used to diagnose the NES were (a) at least one typical attack should have been recorded on the VEEG, (b) no EEG changes should be noticed during the event, (c) no post 'ictal' slowing on EEG, and (d) no evidence of any neurological condition responsible for the events.[20] Co-existent epilepsy was not an exclusion criterion. At least one of the two expert child and adolescent psychiatrists in the child and adolescent psychiatry department (KJVS and SS) evaluated all 44 children either on inpatient or outpatient basis. The clinical information was obtained from the child and corroborated with the parent/guardian. The diagnosis of PNES was made after a detailed evaluation while assessing the psychiatric morbidity based on DSM-5 criteria. The diagnosis of epilepsy in children with definite evidence of PNES was based on both the clinical description of the event and sometimes associated epileptiform discharges recorded on the EEG.

The medical records of these children were reviewed in detail to assess the nature of the illness, past history of seizures, associated psychiatric co-morbidity, family history of psychiatric disorders or epilepsy, final diagnosis and interventions done (pharmacological or psychosocial). The outcome parameters noted were the number of follow-up visits, duration of follow-up, response to the psychotropic and/or psychosocial intervention, presence of symptoms at follow-up, return to the premorbid functional status as per self/parental report, level of functioning as reflected by the social involvement and scholastic work.

Written informed consent was taken from the parents/legal guardians before the video-EEG recording. The data was tabulated in a spreadsheet and descriptive analysis approach was used. The means, standard deviations (SD) and medians were calculated. All analyses were performed using R software (version 3.0.2).

3. Results

Out of a total of 1281 video-EEGs (adult: 763, children: 518) performed during this period, 139 (10.8%) patients were suspected to have NES based on the VEEG monitoring. Forty four of the 139 (31.7%) subjects were children below 16 years of age. These 44 four children along with parent/caretaker completed the psychiatric evaluation. Thirty four among 44 children were diagnosed as PNES. The prevalence of PNES in children who underwent evaluation with video-EEG was found to be 6.6% (34/518) in the present study.

3.1. Clinical and demographic details

The age at onset of PNES was 9 ± 3.7 years (range: 5–16 years; median: 8.0 years), age at diagnosis was 12 ± 3.0 years (range: 8–18 years; median: 12.0 years). The mean frequency of the PNES attacks was 69.3 ± 77.2 per month, ranging from 2 per month to as high as 300 per month (median: 30.0 per month). The mean duration of the illness before the diagnosis of PNES was 0.83 ± 1.2 years (range: 1–6 years; median: 1.5 years).

3.2. Psychiatric diagnosis and co-morbidity

Thirty four children were diagnosed as having PNES and the most common underlying psychiatric diagnosis was conversion disorder (34/44; 77.3%). Stressors delineated among the 34 children diagnosed to have conversion disorder, most often related to the scholastic difficulties (17/34; 50.0%) followed by the interpersonal relationship problems (9/34; 26.5%) and the familial/parental stressors (8/34; 23.5%). More than one psychiatric diagnosis was noted in 17 children (17/34, 50%). These were intellectual disability in 8/34 (23.5%), depression in 5/34 (14.7%), and specific learning disorder in 5/34 (14.7%) children. In total, there were 13 (38.2%) children with developmental disability either in the form of intellectual disability or specific learning disorder.

The remaining 10 children (10/34, 22.7%) had non-epileptic seizures with underlying diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) ($n = 3$), gratification disorder ($n = 2$) and other conditions like specific learning disorder, night terrors, hypersomnolence, cold precipitating dyskinesia, isovaleric aciduria seen in one patient each.

4. Interventions

Psychosocial interventions included working with the family and child. Reassurance along with acknowledging of the symptoms and educating the parents with regard to the nature of the illness and ways of handling the paroxysmal attacks was the most common psychosocial intervention done in these children (34/34, 100%). Individual therapy, involving cognitive behavioral therapy (CBT)/psychotherapy was used in 58.8% (20/34). Psychotropic medications were used in 18 children (18/34, 52.9%). The most common medication class used was selective serotonin reuptake inhibitors (SSRI) (14/34; 41.2%), fluoxetine ($n = 5/34$; 14.7%), escitalopram ($n = 5/34$; 14.7%), sertraline ($n = 3/34$; 8.8%) and fluvoxamine ($n = 1/34$, 2.9%). Clonazepam was the most common non-SSRI drug prescribed (7/34, 20.6%). Combined intervention involving both pharmacological and psychosocial interventions and was used in 18 children (18/34, 52.9%).

4.1. Follow-up and outcome

The mean follow-up was 10.1 ± 6.8 months. Twenty six (76.5%) children did not have PNES attacks at the follow-up. Five (14.7%) children had experienced reduced number of attacks while 3 (8.8%) children continued to have attacks at the same or increased frequency at the mean follow-up. Improvement was seen in the functional status among 19 (19/26, 73.1%) children, who had no recurrence of PNES after intervention.

Among children who underwent individual therapy, 12/20 (60.0%) responded well, 4/20 (20.0%) had partial response with reduced frequency of attacks and 4/20 (20.0%) children had persistent attacks with the same or increased frequency. Among