Psychiatric Features of Children and Adolescents With Pseudoseizures

Elaine Wyllie, MD; John P. Glazer, MD; Selim Benbadis, MD; Prakash Kotagal, MD; Barbara Wolgamuth, REEGT

Background: Pseudoseizures may occur as a somatoform disorder in children and adolescents as well as adults. However, few data are available about psychiatric features or outcome in pediatric patients.

Patients and Methods: We studied 34 patients (25 girls [74%]) who were evaluated by a child psychiatrist at our institution immediately after diagnosis of pseudoseizures by ictal video electroencephalogram (EEG) at ages 9 to 18 years (mean age, 14 years). Each patient had at least 1 pseudoseizure recorded by video EEG that was judged by the patient and family as typical, characterized by unresponsiveness plus limb twitching or limpness and other features, with EEG showing persistence of normal cortical background rhythms.

Results: In addition to conversion disorder, 11 patients (32%) had mood disorders including major depression, bipolar disorder, or dysthymic disorder, usually with severe psychosocial stressors. Eight children (24%) had separation anxiety and school refusal with moderate psychosocial stressors. Two patients (6%) had brief reactive psychosis or schizophreniform disorder. A few (1-3) patients each had panic disorder, overanxious disorder, adjustment disorder, oppositional/defiant disorder, or impulse control disorder. Four patients (12%) also had personality disorders. Eleven patients (32%) had a history of sexual abuse. This was especially frequent in the subgroup with mood disorders (7 [64%] of 11 patients). Fifteen patients (44%) had severe family stressors including recent parental divorce, parental discard, or death of a close family member. Two patients (6%) had a history of physical abuse. Freedom from pseudoseizures for the preceding 9 to 55 months (mean, 30 months) was achieved for 15 (72%) of the 21 patients who could be reached for telephone follow-up. For 8 (53%) of these 15 patients, the last pseudoseizure was within 1 month of diagnosis by video EEG.

Conclusions: Major mood disorders and severe environmental stress, especially sexual abuse, are common among children and adolescents with pseudoseizures and should be considered in every case. A subgroup of children with separation anxiety and school refusal had less severe psychiatric problems and moderate psychosocial stressors. Clear diagnosis by video EEG, together with prompt psychiatric evaluation and treatment, may result in freedom from pseudoseizures for most children and adolescents.

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Editor’s Note: The fact that one third of the children in this study had a history of sexual abuse gives me a bad-mood disorder.

Catherine D. DeAngelis, MD

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Pseudoseizures, also called “psychogenic seizures,” “non-epileptic seizures,” or “hysterical seizures,” are clinical events that resemble epileptic seizures but are not associated with abnormal cortical electrical discharges. They may occur as a somatoform disorder, with prevalence estimated at 5% of an outpatient population of adults with epilepsy. Pseudoseizures can also manifest in children and adolescents, occurring as early as 5 or 6 years of age. Patients with pseudoseizures may represent 15% to 22% of adult referrals to epilepsy centers, and composed 7% of pediatric patients who had video electroencephalogram (EEG) monitoring at The Cleveland Clinic Foundation, Cleveland, Ohio, between 1989 and 1995.

Since the advent of enhanced diagnosis by prolonged video EEG monitoring, pseudoseizures have been studied in detail in adults and children. Most reports have focused on characteristics of the pseudoseizures for differential diagnosis from epileptic events, but some have focused on the underlying psychological factors in adults. Few data are available about the psychiatric aspects or outcome of pseudoseizures in children and adolescents. To explore these issues, we studied pediatric patients diagnosed as having pseudoseizures at our institution.
mediation and which events required psychiatric intervention.

Once the diagnosis was confirmed by video EEG of a typical episode, results were immediately presented to the patient and family by the attending pediatric neurologist. Our strategy for disclosure of the diagnosis is similar to those described elsewhere.35,36

Antiepileptic medication administration was not restarted, except in the 4 patients with epilepsy as well as pseudoseizures. We reinforced the discussion with a brochure on the topic that is produced at our institution.37

In the 4 patients with dual diagnosis, the nonepileptic events were much more frequent than the epileptic seizures. Clarification that the daily events were psychogenic, and that the epileptic seizures were actually rare, led to reduction or simplification of antiepileptic drug therapy in each case. The 4 patients with epileptic and nonepileptic seizures were the only patients discharged from the hospital still receiving antiepileptic medication.

All patients in this series were evaluated at the time of diagnosis by a pediatric psychiatrist at our institution with extensive experience in the evaluation and treatment of pseudoseizures. Thirty patients (88%) had psychiatric evaluation by one of us (J.G.). Multiaxial psychiatric findings were codified according to the system outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV).30

Most of the patients in this series were referred from distant medical centers for diagnosis, with follow-up care continued at the home institution. Only a few of the patients had long-term outpatient psychiatric care at our institution. Twenty-one patients (62%) could be reached for telephone follow-up, 11 to 61 months (mean, 35 months) after diagnosis with video EEG. The remaining patients had moved with no available forwarding address.

Overall, major mood disorders were identified in 11 patients (32%), including 9 girls and 2 boys. All but 3 of these patients with mood disorders were assessed to have severe psychosocial stressors. A history of sexual abuse was especially frequent in this subgroup (7 [64%] of 11 patients). Two of these sexually abused patients had classic findings of posttraumatic chronic stress disorder, including flashbacks to the event and other features, and both also had a personality disorder.

In contrast, the subgroup with separation anxiety and school refusal (8 patients: 6 girls, 2 boys) tended to have less severe psychosocial stressors. Only 1 patient had a history of sexual abuse, and 1 had a history of physical abuse. Associated features included overanxious disorder (2 patients), adjustment disorder (1 patient), dysthymic disorder (1 patient), histrionic personality disorder (1 patient), or attention-deficit/hyperactivity disorder.

**RESULTS**

**PSYCHIATRIC DIAGNOSES**

Axis I DSM-IV diagnoses included conversion disorder in every case. Repression of painful thoughts or memories, along with dissociation to avoid confrontation of these concerns, seemed to be explicitly or implicitly operant in each case. In none of the children or adolescents in our series were the pseudoseizures judged to be due to malingering, factitious disorder (Munchausen syndrome), or factitious disorder by proxy.

Comorbid Axis I, II, and III DSM-IV diagnoses are listed in Table 1. Psychosocial stressors (Axis IV DSM-IV diagnoses) were rated as moderate in 18 patients and as severe in 16 patients. The most common stressors are listed in Table 2.

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**PATIENTS AND METHODS**

We identified 38 children and adolescents who had pseudoseizures diagnosed by ictal video EEG at The Cleveland Clinic Foundation between 1992 and 1996. Four patients were excluded because they were not evaluated by a child psychiatrist at our institution. The remaining 34 patients were aged 9 to 18 years (mean and median, 14 years) at the time of the evaluation. Age at onset of pseudoseizures was 8 to 18 years (mean and median, 13 years) and duration of pseudoseizures until video EEG diagnosis was 0.5 to 48 months (mean, 11.4 months; median, 4.5 months). Twenty-five patients (74%) were female and 9 were male. Pseudoseizures occurred daily in 21 patients, weekly in 10 patients, or less frequently in 3 patients. Twenty-four patients (70%) were taking antiepileptic medication at the time of diagnosis. One additional patient was taking atenolol and fludrocortisone acetate for presumed vasovagal syncope.

All patients had prolonged video EEG monitoring at The Cleveland Clinic Foundation with scalp electrodes (10-20 system) for several days after discontinuation of antiepileptic drugs. Hourly 2-minute computerized samples of interictal EEG were reviewed by an electroencephalographer, as were additional samples identified by a computerized spike detection program. Videotapes and EEGs of all recorded events were also interpreted by an electroencephalographer and archived along with interictal samples.

Each patient had at least 1 event recorded by video EEG that was judged by the patient and family as typical. Events were characterized by decreased responsiveness in all patients, plus limpness or focial or generalized limb twitching and jerking. Some patients also had eye blinking, spitting or bubbling of saliva, vocalization, or thrashing. Most patients were unable to recall ictal events after the pseudoseizure. Electroencephalograms showed persistence of normal cortical background rhythms during all recorded pseudoseizures. Events in 3 patients were induced by suggestion and saline injection.35,36,39,40 The provocative test was subsequently abandoned and the rest of the pseudoseizures occurred spontaneously.

Thirty patients had normal interictal EEG results. Four patients (12%) had interictal epileptiform abnormalities, supporting a previously known diagnosis of epilepsy in addition to the newly diagnosed pseudoseizures. The epileptic seizures in each of these 4 patients were clearly different from the nonepileptic events, and were under good control with medication. One patient had childhood absence epilepsy that was well controlled by valproate, 1 had complex partial seizures arising from the right posterior temporoparietal area due to cortical dysplasia with rare epileptic seizures after epilepsy surgery, 1 had left motor seizures and left hemiparesis due to remote right parieto-occipital infarction, and 1 had left motor seizures in the setting of a diffuse neuronal migration disorder (double cortex syndrome). Videotapes of epileptic and nonepileptic seizures were reviewed with the parents so that they clearly understood which events required treatment with antiepileptic medication and which events required psychiatric intervention.

Once the diagnosis was confirmed by video EEG of a typical episode, results were immediately presented to the patient and family by the attending pediatric neurologist. Our strategy for disclosure of the diagnosis is similar to those described elsewhere.35,36

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All patients in this series were evaluated at the time of diagnosis by a pediatric psychiatrist at our institution with extensive experience in the evaluation and treatment of pseudoseizures. Thirty patients (88%) had psychiatric evaluation by one of us (J.G.). Multiaxial psychiatric findings were codified according to the system outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV).30

Most of the patients in this series were referred from distant medical centers for diagnosis, with follow-up care continued at the home institution. Only a few of the patients had long-term outpatient psychiatric care at our institution. Twenty-one patients (62%) could be reached for telephone follow-up, 11 to 61 months (mean, 35 months) after diagnosis with video EEG. The remaining patients had moved with no available forwarding address.

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**Table 1**

**PSYCHIATRIC DIAGNOSES**

<table>
<thead>
<tr>
<th>Diagnosis</th>
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<tr>
<td>Comorbid Axis I, II, and III DSM-IV diagnoses</td>
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**Table 2**

**Psychosocial stressors**

<table>
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<th>Stressor</th>
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<tr>
<td>Axis IV DSM-IV diagnoses rated as moderate</td>
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Overall, major mood disorders were identified in 11 patients (32%), including 9 girls and 2 boys. All but 3 of these patients with mood disorders were assessed to have severe psychosocial stressors. A history of sexual abuse was especially frequent in this subgroup (7 [64%] of 11 patients). Two of these sexually abused patients had classic findings of posttraumatic chronic stress disorder, including flashbacks to the event and other features, and both also had a personality disorder.

In contrast, the subgroup with separation anxiety and school refusal (8 patients: 6 girls, 2 boys) tended to have less severe psychosocial stressors. Only 1 patient had a history of sexual abuse, and 1 had a history of physical abuse. Associated features included overanxious disorder (2 patients), adjustment disorder (1 patient), dysthymic disorder (1 patient), histrionic personality disorder (1 patient), or attention-deficit/hyperactivity disorder.
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Most of our patients did not return to our institution for long-term psychiatric care after being discharged from the hospital. Of the 21 patients who could be reached for tele-
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low-up telephone conversation with families, we learned
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darate psychiatric intervention, because almost all of the
<table>
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<tr>
<th>Stressor</th>
<th>No. (%) of Patients</th>
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<tr>
<td>Severe family stress*</td>
<td>15 (44)</td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>11 (32)</td>
</tr>
<tr>
<td>Physical abuse</td>
<td>2 (6)</td>
</tr>
<tr>
<td>School failure</td>
<td>3 (9)</td>
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*Parental divorce, parental discord, or death of a close family member.

In most patients, pseudoseizures did not immedi-
ate follow a specific psychosocial stressor but instead
sequence months or years after sexual or physical abuse
against the backdrop of chronic family dysfunction. A particularly common scenario was the onset of pseu-
doseizures in adolescent girls following sexual abuse in early childhood. Occasionally, an immediate, more clearly
apparent precipitant could be identified. For example, one patient developed pseudoseizures on the day of her sister’s wedding, when the family’s attention was di-
vert from the patient after her recovery from re-

cent successful epilepsy surgery. More often, however, the underlying psychosocial stressors were less clearly
tied in time to the pseudoseizures and often required de-
tailed psychiatric interviews to be uncovered.

OUTCOME

Most of our patients did not return to our institution for long-term psychiatric care after being discharged from the hospital. Of the 21 patients who could be reached for tele-
phone follow-up, 15 (72%) were free of pseudoseizures for the preceding 9 to 55 months (mean, 30 months) and 6 (28%) had persistent pseudoseizures. Among the 15 pa-
tients who were free of pseudoseizures, the last event was
during the video EEG evaluation in 4 cases (27%) and
within 1 month after diagnosis in 5 cases (33%). The re-
aining 6 pseudoseizure-free patients (40%) had gradual
diminution in frequency of events with occasional exac-
brations, and complete cessation within 2 years.

Of the 4 patients with epilepsy and pseudoseizures, 2 could be reached for follow-up and both were free of pseudoseizures. These 2 patients continued taking antiepilep-
tic medication with good control of their epileptic sei-
zures. Two additional patients were also taking antiepileptic medication at the time of follow-up, despite the lack of an epilepsy diagnosis at our institution. Both of these pa-
tients were free of pseudoseizures but continued taking
small doses of carbamazepine or gabapentin because of the
parents’ conviction of an epileptic etiology.

Patient numbers were too small for meaningful analy-
es, but no clear trends emerged for outcome between psychiatric groups. Among patients who could be reached for follow-up, freedom from pseudoseizures was achieved
for 4 of 7 patients with separation anxiety and school ref-
fusal, 5 of 6 patients with major mood disorder, 2 of 3
patients with personality disorder, 2 of 2 patients with
schizophreniform disorder or brief reactive psychosis, and
3 of 4 patients with a history of sexual abuse.

It was not possible for us to relate outcome to long-
term psychiatric intervention, because almost all of the
patients were referred for long-term outpatient care to
other psychiatric centers closer to home. During our fol-
low-up telephone conversation with families, we learned
that the extent and nature of the long-term psychiatric care varied greatly from patient to patient. This high de-
gree of variability prevented detailed analyses in relation
to outcome.

COMMENT

Our findings indicated that major mood disorders and severe environmental stress, including frank abuse, are
common among children and adolescents with pseudoseizures, and should be considered in every case. Approxi-
mately one third of these patients had a major mood dis-
order and approximately one third had a history of
sexual abuse, with significant overlap between the 2 groups. Forty-four percent of patients had severe family stressors including recent parental divorce, parental discord, or death of a close family member, and 2 patients suffered physical abuse by an adult relative. Three pa-

| Table 1. Psychiatric Diagnoses Classified According to the DSM-IV* |
|------------------------|----------------------|
| Axis I diagnoses       | No. of Patients     |
| Conversion disorder    | 34                   |
| Major depression       | 6                    |
| Panic disorder         | 3                    |
| Bipolar disorder, depresed | 1                 |
| Dysthymic disorder     | 4                    |
| Posttraumatic chronic stress disorder | 3       |
| Brief reactive psychosis| 1                  |
| Schizophreniform disorder | 1                |
| Separation anxiety/school refusal | 8     |
| Attention-deficit/hyperactivity disorder | 5     |
| Overanxious disorder   | 2                    |
| Adjustment disorder with mixed emotional features | 2     |
| Oppositional/defiant disorder | 1     |
| Impulse control disorder | 1                  |
| Axis II diagnoses      |                      |
| Mild mental retardation| 2                    |
| Dependent traits       | 2                    |
| Borderline personality disorder | 2      |
| Mixed personality disorder | 1               |
| Histrionic personality disorder | 1    |
| Axis III diagnoses     |                      |
| Epilepsy               | 4                    |
| Single febrile seizure | 1                    |
| Severe head trauma     | 1                    |
| Hearing impairment     | 1                    |

*DSM-IV indicates Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.40
patients met the diagnostic criteria for chronic posttraumatic stress disorder.

The pseudoseizures usually did not immediately follow a specific psychological stressor but instead occurred months or years after sexual or physical abuse or against the backdrop of severe chronic family dysfunction. The relationship between stressors and pseudoseizures was rarely apparent during neurologic evaluation and history taking, and a detailed psychiatric interview was required in almost every case to uncover key etiologic precursors. Positive video EEG identification of the nonepileptic nature of the pseudoseizures led to a shift in therapy away from antiepileptic drugs, while elucidation of the psychiatric pathophysiology and diagnosis led to specific psychopharmacologic intervention, psychotherapy, and family counseling.

In addition to conversion disorder, several children and adolescents in our series had psychiatric disturbances other than mood disorders, including panic disorder, overanxious disorder, oppositional/defiant disorder, impulse control disorder, and, in 2 cases, psychosis. Although our results confirmed psychoses in only 3% of the cases, their rarity in the general population indicates that pediatric patients with pseudoseizures should be screened for these severe disorders.

Previous authors have also stressed the importance of childhood sexual abuse as a factor in pseudoseizures and somatoform disorders in general. However, few previous data are available concerning other psychiatric features of pseudoseizures in pediatric patients. In a study of 43 children and adolescents, Lancman et al described moderate depression in only 3 patients (7%), “hysteroid features” in 3 patients (7%), “obsessive-compulsive personality” in 1 patient (2%), and “psychotic personality” in 1 patient (2%). Based on these observations, Lancman et al concluded that severe psychopathology is not often seen in children with psychogenic seizures, in contrast with adults. However, their report does not detail the nature or extent of the psychiatric evaluations. The higher frequency of significant psychiatric diagnoses in our pediatric series may be due to our systematic approach, with an immediate postdiagnosis evaluation of every patient by a child psychiatrist at our institution. With this method, we uncovered significant psychiatric or psychosocial concerns in most cases.

Our series included a subgroup of children and adolescents with separation anxiety and school refusal. In several cases, the children initially missed school because of headaches or abdominal pain, then escalated to pseudoseizures when school attendance was initially enforced. Some of the children had separation anxiety related to family dysfunction, while others avoided school because of failure brought on by undiagnosed learning disabilities or attention-deficit/hyperactivity disorder. These children benefitted from family counseling, classroom setting modifications based on results of neuropsychological assessment, and, in some cases, treatment with methylphenidate or tricyclic antidepressants for attention-deficit/hyperactivity disorder or separation anxiety.

Among those who could be reached for follow-up, 70% of the children and adolescents in our series were free of pseudoseizures after a mean follow-up time of almost 3 years from video EEG diagnosis. These results are similar to those in a previous series from our institution, in which pseudoseizure-free outcomes at 1, 2, and 3 years' follow-up were significantly more frequent among 18 children and adolescents (73%, 75%, and 81%, respectively) than among 20 adults (29%, 25%, and 40%, respectively). The results from our previous and current series indicate that pseudoseizures are amenable to treatment in most pediatric patients.

LACK OF PROLONGED chronicity may be a positive factor for outcome of pseudoseizures in children and adolescents. In the previous series from our institution, the children and adolescents not only had better outcome than the adults, but also shorter mean duration of pseudoseizures until video EEG diagnosis (5.5 months vs 5.5 years). In the current pediatric series, the median duration to diagnosis was 4.5 months. Others have also noted the importance of chronicity as a predictor for outcome. We agree with Brunquell that early neuropsychiatric diagnosis and intervention are critical to prevent the behavioral pattern of pseudoseizures from becoming fully incorporated into the patient's personality and way of life.

In our series, we did not find differences in outcome with respect to pseudoseizures based on psychiatric diagnosis. Freedom from pseudoseizures was similarly frequent for patients with various psychiatric diagnoses, and for patients with or without a history of sexual abuse. However, patient numbers within diagnosis groups were too small for meaningful comparison. In contrast, Guberman noted a trend based on psychiatric diagnosis in a small study of adults, with freedom from pseudoseizures for 5 of 6 patients with less severe psychopathology and a history of recent emotional trauma, compared with persistence of pseudoseizures for each of 6 patients with more severe psychiatric disturbance. However, several of the adults with poor outcome also had a long history of pseudoseizures, so chronicity may have been a factor. To our knowledge, previous pediatric studies have not systematically explored outcome in relation to specific psychiatric diagnosis.

Twelve percent of our patients had epilepsy as well as pseudoseizures, with abnormal interictal EEGs and a clear history of 2 distinct types of events. Others have also noted a significant coincidence of epilepsy and pseudoseizures in children and adolescents. In each of our cases, the epileptic seizures were very different from the pseudoseizures, and the patients and their families were able to appreciate the distinction. Patient education was facilitated by review with the family of videotaped events recorded during the evaluation. Of the 2 patients with both epileptic and nonepileptic seizures who could be reached for follow-up, both were free of pseudoseizures and in both cases the epileptic seizures were also under good control with antiepileptic medication. A dual diagnosis of epileptic and nonepileptic seizures is more complicated than a pure diagnosis of pseudoseizures, but is not incompatible with favorable outcome.

Most of our patients did not return to our institution for formal psychiatric assessment at the time of follow-up, so we could not address the degree to which free-
dom from pseudoseizures paralleled recovery to a fully functioning lifestyle and resolution of other psychiatric issues. However, others have approached this question. In a case-control study from Denmark, Kristensen and Alving compared patients with pseudoseizures with patients with epilepsy, and found that a significantly higher percentage of the patients with pseudoseizure lived on a public disablement pension. In their study, 45% of the patients with pseudoseizure were free of events but this did not necessarily reflect full functional recovery.

In conclusion, critical tools for diagnosis and treatment of pseudoseizures include video EEG and detailed pediatric psychiatry assessment. Major mood disorders and severe psychosocial stressors, including sexual and physical abuse, are common in children and adolescents with pseudoseizures and should be sought in every case. Other psychiatric conditions also occur, but psychosis is rare. A smaller subgroup includes children with separation anxiety and school refusal who may benefit from counseling, educational assessment and intervention, and, in some cases, pharmacotherapy. Recognition that the seizures are psychogenic and not epileptic, together with identification of the relevant psychiatric and psychosocial factors, are strong therapeutic tools. Based on results from our current and previous studies, it seems that freedom from pseudoseizures can be achieved for most pediatric patients.

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REFERENCES