A 15-Year-Old Boy with Aggression and Paranoia

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A 15-year-old boy with a history of epilepsy and two previous psychiatric hospitalizations presented to the emergency department by ambulance after his school psychologist expressed concern for the safety of his peers and family. He had been making threats toward his peers at school, saying that he would “blast their brains out,” and had told his school psychologist that he was going to kill his family in their sleep. In light of these threats, inpatient hospitalization was recommended.

At age 11 years he was diagnosed as having epilepsy, with predominantly complex-partial seizures. After numerous trials of anticonvulsant medications, the patient seemed to have finally obtained seizure control with his current medication regimen of 1,500 mg/d of divalproex sodium, 250 mg/d of lamotrigine, and 900 mg/d of oxcarbazepine (as prescribed by his outpatient neurologist). His last documented seizure was 12 months prior to admission.

The patient was first hospitalized in the 6th grade after a suicide attempt via ingestion of pills 3 months after his epilepsy diagnosis. His second psychiatric hospitalization was in the 7th grade, after he reported to his parents that he “wanted to end it” and was later witnessed by the police to be standing on a highway overpass.

Further history revealed his parents’ concern regarding paranoia, stating the patient first displayed psychotic symptoms shortly after his epilepsy diagnosis. For example, he would place all of his belongings in his bedroom closet and use packaging tape to secure the door due to fear of monitoring equipment. At age 15 years (3 months prior to this admission), he had experienced significant symptoms of paranoia with disturbing visual hallucinations of demons, always occurring before falling asleep. The patient reported that his neurologist did not feel these episodes were related to the seizures but rather were related to a psychiatric diagnosis separate from his epilepsy. His most recent visit to the neurologist was 8 months prior to admission and did not result in any changes to the existing seizure-management plan.

Symptoms of paranoia and delusional thinking were evident during this current admission, as he described being the “anointed spiritual leader” of his church youth group, noting demons were inhabiting people and intending to cause him harm. He felt that hiding various weapons in his backpack would offer him protection.

The patient did not recognize these thoughts and behaviors as abnormal, and he appeared to only be distressed about intrusive worries about demons, fearful he might hurt someone. He described an intense fear of “doing something terrible, like stabbing a man.” He expressed profound difficulty in controlling violent urges.

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The patient had no outpatient psychiatrist and was taking no other medications. The patient reported a one-time use of marijuana 3 weeks prior to admission, but did not report use of alcohol, tobacco, or any other drugs. Family history was significant only for depression in his father and cousin.

Upon admission, all laboratory data, including an extensive toxicology and comprehensive metabolic and hematologic battery, were unremarkable. A magnetic resonance imaging scan of the brain was unremarkable. The patient’s antiseizure medications were within therapeutic range, and a consultation was requested of the neurology service who felt his current medication regimen was appropriate. During his stay, the patient described various symptoms consistent with past seizures, including epigastric auras as well as unusual “finger picking” movements. Thus, with a history of two abnormal electroencephalograms (EEGs) in the past 2 years and intermittent follow-up with his outpatient neurologist, the treatment team felt it would be of benefit to obtain another EEG. This new EEG showed a left, focal, temporal slowing but no overt electrographic seizures.

The EEG results suggested that the patient’s psychiatric symptoms could be originating from a chronic interictal psychosis pattern.

The epileptic temporal lobe focus has been associated with a higher incidence of psychosis, irritability, self-criticism, and depression.\(^1,2\) In this patient, for further seizure control, gabapentin and lorazepam were prescribed, with the additional benefit of mood regulation and sleep. Gabapentin was increased to 600 mg 3 times daily during the patient’s hospital stay, which correlated with a decrease in aggression. However, he continued to experience paranoia and hyper-religiosity; therefore, low-dose daily risperidone was initiated based on its relatively lower potential to decrease seizure threshold,\(^2,3\) as well as to address his religiosity and residual aggression. Two days after beginning risperidone, the patient noticed significant improvement in the targeted symptoms and could no longer justify the use of weapons to protect himself. His paranoia, delusional thinking, and hyper-religiosity had completely resolved by the time of discharge.

Differentiating the diagnosis of a primary versus secondary psychosis can be challenging. Based on the temporal relationship of seizure activity, our patient was thought to be experiencing interictal psychosis, which is often associated with prominent paranoid delusions, preserved affect, normal premorbid personality, and no family history of schizophrenia.\(^1\) When compared with primary psychosis, patients with interictal psychosis usually exhibit fewer negative symptoms, express greater insight, and do not demonstrate a deterioration of personality throughout the course of the illness.\(^5,6\)

Proposed etiologies of schizophrenia and epilepsy describe shared frontal-limbic neurocircuitry defects. However, cognitive deficits and disorganization (found primarily in schizophrenia) are thought to be secondary to frontal lobe dysfunction, whereas the positive symptoms of delusions and hallucinations (found in both schizophrenia and potentially temporal lobe epilepsy) are thought to originate from the dysfunction of temporal lobe structures. The affective aspect of these symptoms can be attributed to limbic dysregulation.\(^7\)

The patient experienced complex partial seizures, making him 2 to 3 times more likely to experience...
psychotic symptoms than adolescents with generalized epilepsy.\textsuperscript{1,2} Other risk factors for developing psychoses as a patient with epilepsy include low socioeconomic status, stress in the family environment, and young age of onset of seizures.\textsuperscript{8} Regarding stress in the family environment, a child with temporal lobe epilepsy is more likely to experience difficulties related to his or her environmental situation, such as familial rejection, and have significant difficulties in social competency than their nonepileptic peers.\textsuperscript{6} These characteristics may alter the patient’s ability to form relationships, potentially leading to further psychiatric symptoms.

The incidence and prevalence of aggression in patients with epilepsy is unknown, but it has been shown to occur more often in pediatric patients with epilepsy and is associated with psychosis.\textsuperscript{6} This aggression demonstrates a correlation with below average intelligence, low socioeconomic status, a disruptive home environment, accessibility of weapons, and previous head injuries.\textsuperscript{1,4}

Although neuroleptics have the ability to lower the seizure threshold, the risk is relatively low and should not prevent a physician from treating psychosis. Early administration of neuroleptics has been proven to shorten the duration of interictal psychosis.\textsuperscript{9}

**CONCLUSIONS**

Recognizing and treating psychosis, among other comorbid psychiatric symptoms, in epilepsy is of the utmost importance. Although epilepsy is undoubtedly disruptive to the patient’s quality of life, the behavioral disturbances associated with epilepsy may be of even greater impact. Systematic guidance must be provided to physicians in hopes of improving recognition of psychiatric symptoms in epilepsy and other general medical disorders.

**REFERENCES**