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Case Report

Identifying Seizure Disorder in Autistic Teen Uncovers Key to Managing Mood Irritability

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Abstract

The risk of developing epilepsy for an autistic person is greater than twice that compared with typically developing peers. Seizure disorders can negatively impact behavior, thus complicating patient management. This case illustrates the challenges often associated with making a diagnosis of seizure disorder in autism as well as the positive impact that the treatment of epilepsy can have on the management of behavioral challenges, including irritability. Identifying, diagnosing and treating the seizure disorder in this case uncovers the key to managing chronic irritability for this autistic teen.

Keywords: Autism Spectrum Disorder; Seizure Disorder; Irritability; Neurology; Psychiatry; Epilepsy

Introduction

This case illustrates the importance of identifying seizure disorders in autism, especially when the patient is not responding as expected to psychiatric treatment interventions. A literature review confirms the elevated risk of developing epilepsy in autism as well as the frequently encountered clinical challenges in recognizing and diagnosing seizure disorders in this population.

Case Report

Jacob (not the patient's real name) was diagnosed with Autism Spectrum Disorder (ASD) at age 3, and subsequently with Attention Deficit Hyperactivity (ADHD) and Anxiety Disorder. His symptoms including significant irritability were well controlled with a combination of methylphenidate, atomoxetine, and sertraline until age 13, at which time he began to demonstrate increasing distractibility and impulsivity, with disinhibited acting out behaviors and unprovoked acts of physical aggression. His behaviors were becoming an increasing concern both in the home as well as the classroom setting to the extent that he required full-time paraprofessional support to assist with behavior management. At the age of 15, Jacob's parents seek psychiatric consultation and treatment at our academic medical center.For the management of irritability associated with autism, medication trials of both aripiprazole and risperidone were found to be helpful, but caused akathisia and weight gain, respectively. Paliperidone provided modest benefit for irritability, still with weight gain but less than was associated with previous medications. Jacob's teachers began to report frequent "staring off episodes" which would stop if someone touched him or waved their hands in front of him, which neurology stated was not usual for seizures. Jacob was reported to demonstrate hypersalivation and/or urinary incontinence during some of these events however did not have any automatisms or other motor findings.

Jacob's EEG was reported to be normal, however EEGs which measure surface electrical activity in the brain can sometimes fail to detect underlying seizure activity. Although the history was challenging, and Jacob's EEG was negative, he was diagnosed

with complex partial seizures (also known as focal seizures with impaired awareness) and started on oxcarbazepine. Seizures have remained well controlled and have not recurred. Repeat EEGs and MRI of the brain were normal. Jacob's irritability and associated behavioral problems finally improved, presumably related to management of the underlying seizure disorder as well as the mood stabilizing properties associated with this anticonvulsant medication. Now at age 21, Jacob continues to have many of the typical behavioral challenges associated with autism, but is doing very well overall in terms of emotional self-regulation and impulse control. He is now attending his third year of college, earning excellent grades, and has plans to pursue a master's degree. He benefits from having a life coach to assist with personal and educational goals, remains engaged in psychotherapy, continues to practice strategies to help manage social and communication challenges and continues to take medications for treatment of ADHD, anxiety, chronic insomnia, and seizure disorder.

It can be challenging to identify epilepsy in autism as the symptoms associated with seizure episodes can overlap with the core features of ASD. Even an experienced healthcare professional may find it difficult to differentiate commonly associated features of ASD including reduced responsiveness to external stimuli or behavioral stereotypies from absence seizures or focal seizures, which can manifest with impaired awareness. Autism is associated with a significant risk for the development of epilepsy that can onset either in the early developmental period or in adolescence. Clinicians need to consider the need for seizure evaluation in their patients with autism, therefore a high index of suspicion is necessary, even in the setting of normal EEG, MRI or lack of other known risk factors such as intellectual disability or family history of epilepsy.

Discussion

Epilepsy and autism frequently co-occur. In the general population, Autism Spectrum Disorder (ASD) prevalence is estimated to be 1 in 54 (1.85%) [1] while the prevalence of epilepsy is estimated to be 7.6 per 1000 (.76%) [2]. In 2019, a systematic review of 283,419 patients showed the period prevalence of epilepsy in patients with autism to be 12.1% [3]. This co-occurrence is believed to be due to similar underlying biological processes including chromosomal, metabolic and environmental factors. In 2013, a cross-sectional study of 5815 participants with ASD estimated the prevalence of epilepsy in children with ASD aged 2 to 17 to be 12.5% suggesting that a child with autism aged 10 or older had a 2.35 times increase in odds of having or developing epilepsy [4]. The association between ASD and epilepsy suggests shared neurobiological mechanisms, as suggested by common and numerous genetic mutations found in ASD and epilepsy, indicative of abnormal synapse formation and function, and thus altering the balance between excitatory and inhibitory neurons [5]. Modern molecular techniques including candidate gene panels and whole-exome sequencing could help elucidate the etiology of ASD and epilepsy and help explain their frequent co-occurrence [6]. Currently there is no clear data whether there is a direct causality or a shared pathophysiological mechanism between these two conditions, and it remains difficult to predict which patients may develop epilepsy. Nevertheless, some identified risk factors for epilepsy include intellectual disability, female sex, family history of ASD or epilepsy, or underlying structural or metabolic etiology such as tuberous sclerosis [7].

The comorbidity of epilepsy in autism has been shown to result in changes in behavior and functioning. A study of 472 participants with ASD without any prior history of seizures showed that for patients who would go on to experience seizures, individuals would show declines in daily living skills and communication abilities, as well as increases in hyperactivity and irritability, as well as poorer overall physical functioning compared to those without seizures [8]. Evidence has shown that epileptiform discharges (EDs) on electroencephalogram (EEG) even without clinically defined seizure episodes in ASD may have cognitive, language and behavioral consequences including elevated levels of irritable mood and aggression [9,10]. Though EEGs are not currently recommended as a screening tool in patients with ASD [11], a literature review showed a 40% prevalence of epileptiform discharges detected in patients with ASD without a history of seizures versus a prevalence of just 5% in healthy individuals [12].

In our case, Jacob was diagnosed with ASD by the age of 3 and shortly thereafter Attention Deficit Hyperactivity Disorder, significant and persistent anxiety and irritability, with seizure disorder eventually diagnosed 10 years after the initial ASD diagnosis. It should be noted that over this time behaviors worsened, and Jacob became less responsive to pharmacotherapy. It is important to consider the possible impact of seizures on emotional and behavioral manifestations on Jacob. This case illustrates the importance of considering epilepsy in patients exhibiting worsening behavior including but not limited to irritable mood and aggression, particularly when patients are unresponsive to pharmacotherapy. Early diagnosis and treatment of epilepsy in autism is crucial in terms of comprehensive medical management but also in minimizing the risk for functional and behavioral decline. This case identifies the need for additional studies designed to help practitioners identify seizure disorders when they co-occur with autism.

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