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Adolescence and Epilepsy: The Perfect Storm for Suicidal Behavior

Self-Injurious and Suicidal Behavior in Young Adults, Teens, and Children With Epilepsy: A Population-Based Study

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Objective: Whereas studies in adult epilepsy patients have shown higher rates of suicidal ideation and attempt, such studies in children are limited. Using the Rochester Epidemiology Project database, we compared the risk of self-injurious behavior and suicidal ideation in a population-based cohort of childhood epilepsy to controls. Methods: We studied 339 cases with epilepsy and 678 age- and sex-matched controls followed to a median age of 24.7 and 23.4 years and identified 98 patients with self-injurious behavior or suicidal ideation (43 with epilepsy and 55 controls). All behaviors were categorized using the Columbia Suicide Severity Rating Scale. Results: Those with epilepsy had a significantly higher rate of any self-injurious behavior and suicidal ideation (hazard ratio [HR] = 1.56, 95% CI = 1.04-2.35) and tended to have an increased risk of suicidal ideation and attempt (HR = 1.48, 95% CI = 0.93-2.37). The prevalence of preceding mood and substance abuse disorders was similarly high in both cases and controls with self-injurious behavior or suicidal ideation; however, preceding attention-deficit/hyperactivity disorder was more than twice as common in the epilepsy cases. Among cases with epilepsy, we did not identify any specific epilepsy-related variable that was significantly correlated with risk of self-injurious behavior or suicidal ideation. Significance: Children, teens, and young adults with a history of childhood epilepsy are at greater risk of self-injurious behavior, highlighting the need for careful screening of mental health concerns as part of routine epilepsy care.

Commentary

We have become increasingly aware of the comorbidities that affect our patients with epilepsy. The updated classification scheme from the International League Against Epilepsy Commission for Classification and Terminology reminds us that there is no "benign" epilepsy; we should be thinking of comorbidities at every step of the classification process.[1] As providers, we often ask about depression, anxiety, and cognitive difficulties. A recent population-based study by Wirrell and colleagues using the Rochester Epidemiology Project (REP) reminds us that we also must think about self-harm and suicidality.[2] Unfortunately, it is not as straightforward as simply asking about depressed mood or even thoughts of self-harm especially for adolescents.

Adolescence is a challenging stage for everyone involved—children, families, teachers, and society. It is a time of tumultuous physical, cognitive, and psychosocial changes. It is a time for risk-taking behaviors, increased independence, and limited understanding of long-term consequences. With this comes increased risk for suicidality and self-injurious behaviors. Suicide attempts peak during adolescence and suicide is the third leading cause of death in people ages 10 to 24 years.[3]

A diagnosis of epilepsy does not give our patients a "free pass" to avoid these additional challenges. The recent REP study demonstrated adolescents and young adults with epilepsy were significantly more likely to have self-injurious behaviors and suicidal ideation (hazard ratio [HR]: 1.56), when compared with age- and sex-matched controls.[2] This is similar to the population-based study of school-aged children with epilepsy in Taiwan, which showed that the epilepsy cohort was 2.34 times more likely to attempt suicide.[4]

Why do we need to add suicidality and self-harm to a disease that already has parents up at night, terrified that their child may die during a seizure? As would be expected in pediatric epilepsy, the answers are not easily identified. The increased risk is unlikely to be due to one, single cause. Epilepsy provides the "perfect storm" of biological, psychological, and social risk factors for suicidality in adolescents.

Biological

First- and second-degree relatives of adolescents who attempt or complete suicide have been found to have an increased risk

of psychiatric disorders, including affective disorder, alcohol or drug abuse, aggressive behavior, and suicidal behavior.[5] However, the REP cohort showed only anxiety was seen more often in family members of children with epilepsy.[2] It is possible the biological mechanisms for suicidality in epilepsy are not purely genetic. Seizure-induced changes in serotonin have been seen in epilepsy patients.[6] Lower levels of cerebrospinal fluid 5-HIAA (5-hydroxyindoleacetic acid), which is an indicator of serotonergic activity, have been measured in patients with high lethality suicide attempts, compared to low lethality attempts.[7] The Taiwan study suggests higher lethality of suicide attempts in the patients with epilepsy and the REP cohort showed people with epilepsy were significantly more likely to reattempt suicide.[2,4] Furthermore, pediatric epilepsy patients have also shown decreased concentrations of tryptophan.[6] Serotonin is metabolized from tryptophan and lowering brain uptake has led to relapse of depressive symptoms in patients with a history of depression.[7] Therefore, adolescents with epilepsy may be at risk for self-harm just from biological changes of epilepsy, but this cannot be the only issue. The tryptophan studies suggest there needs to be pre-existing vulnerability to depressive symptoms.[7] In addition, the REP cohort did not show any correlation between seizure control and suicidality or self-injurious behavior; only 48% were still on medication and the majority of these were on monotherapy.[2]

Psychological

When we think of patients with suicidality, most of us automatically think of a person with depression. Indeed, major depressive disorder has been associated with a 5-fold higher risk for suicide attempts in adolescents.[3] The Taiwan cohort showed HR 1.57 for suicide attempts in teens with depression.[4] There is also an increased risk for suicidality as the number of psychiatric comorbidities including anxiety disorder, sleep disturbances, and autism spectrum disorders—all of which have an increased prevalence in children with epilepsy. However, not all adolescents who attempt suicide are depressed, even in teens without epilepsy.[3] Furthermore, the prevalence of psychiatric diagnosis, other than attention-deficit hyperactivity disorder, was similar between the 2 cohorts in the Wirrell study.[2] Therefore, depression alone is not the answer, but there may be significance to the increased prevalence of ADHD they found. Impulsivity is an important concern for adolescent suicide. Up to 50% of adolescents contemplated self-harm for less than an hour before attempting suicide.[3]

Social

We cannot ignore the importance of peer interactions during adolescence. There is a link between aggression and suicidality in adolescents.[5] Adolescents may misperceive hostility in others, feel persecuted or victimized, or may respond with hostility toward others, leading to peer rejection. Over time, this negative feedback can become overwhelming.[5] This is of particular concern for our young patients with epilepsy, whose peers likely have a negative view of epilepsy.[8] When surveyed, adolescents viewed people with epilepsy as causing mental handicap, and leading to injury of both the person and bystanders.[8] People with epilepsy were felt to have behavior problems, and lack compassion, loyalty, and honesty.[8] They expressed reluctance to befriend someone with epilepsy.[8] Therefore, adolescents with epilepsy are at risk for negative peer interactions. Furthermore, children with epilepsy have been shown to have significantly poorer social skills, even when compared to other children with chronic illness.[9] In particular, these children have difficulties with behaviors such as making conversation and responding to the actions of others.[9]

Through biological, psychological, and social factors, our adolescents with epilepsy truly are the victims of a perfect storm. What can we do about this? We can't change biology. We most certainly can address the contributing comorbidities, especially impulsivity. Most importantly, we can *ask*. We can ask about mood disturbances. We can ask about impulsivity. We can ask about bullying or other negative peer interaction. We cannot assume that parents are aware of these issues. Finally, we need to educate our patients and families of this increased risk, so that they can be watching for signs of self-harm or suicidal ideation. As always with this unpredictable disease, knowledge is power.

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