



## The Challenges of Managing Epilepsy in the Intellectually Disabled

Those with intellectual dysfunction are highly susceptible to seizure disorders but are often unable to communicate with physicians and caregivers.

**T**he diagnosis and treatment of epilepsy in people with normal intellect is a challenge; for people with intellectual disability, the problem is much larger. For instance, doctors rely on the experiences of their patients and the observations of their family members (or caregiver) in order to establish a diagnosis of seizures. Once the diagnosis is made, ongoing diligent observation is needed in order to establish whether or not the person is truly seizure-free.

As we have discussed in previous installments of Epilepsy Essentials, seizures can present in subtle ways; moreover, the person experiencing them may have little indication that one is occurring. In other words, even people who are quite eloquent and observant may have difficulty accurately reporting their events. For those who may have trouble communicating clearly or those whose thinking may be impaired, the clinician faces a great challenge.

### Definitions

Not too long ago, people with intellectual disabilities (ID) were defined by their intelligence quotient, or IQ. An IQ of greater than 70-80 was normal. Below this, the person was diagnosed as being mentally retarded. Mental retardation is a term that is no longer used; however, it was defined in the following manner: an IQ of 50-70 was termed "mild" mental retardation; "moderate" was in the range of 40-50, and "severe" was less than 40.

The more modern approach takes these factors into consideration; however, IQ is no longer the sole determinant

regarding a person's degree of intellectual dysfunction. For instance, a person may be quite intelligent, but have difficulty expressing themselves. Because of this, he or she may appear more impaired than testing can accurately assess. Because of this, physicians and caregivers now focus on the person as a whole: does he or she have motor dysfunction? Language dysfunction? Intellectual impairment? In other words, the treatment of epilepsy in persons with intellectual dysfunction must take this into account, and aim to improve the person's overall quality of life.

### The Scope of the Problem

Epilepsy occurs in one to three percent of the general population. In people with intellectual dysfunction, epilepsy occurs in up to 30-50 percent.<sup>1</sup> The increased rate of seizures reflects that underlying cause of the intellectual impairment: the greater the degree of dysfunction, the higher the likelihood of seizures. For instance, about 20 percent of those with mild intellectual impairment have seizures, whereas seizures affect 50 percent of those with severe ID.

In persons diagnosed with cerebral palsy, about 30 percent will have epilepsy. Twenty-eight percent of people with autism have a seizure disorder.<sup>1</sup> Twenty-five to 50 percent of children who had intraventricular hemorrhage, most often due to prematurity, will develop epilepsy (see Table 1).<sup>2</sup> In this group, there is also a greater likelihood of multiple seizure types. Finally, people who have ID and epilepsy are more likely to have medication-resistant seizures: *i.e.*, refractory epilepsy. In July, Epilepsy Essentials

focused on sudden unexplained death in epilepsy, or SUDEP (full text available for download at [www.avondalemedical.com/PN\\_archive.htm](http://www.avondalemedical.com/PN_archive.htm)). This occurs in people with poorly controlled seizures, especially generalized tonic-clonic seizures. People with ID are more likely to have refractory seizures, and are therefore also at higher risk for SUDEP.

People with intellectual disability are also at higher risk for behavioral and psychiatric problems. It has been estimated that up to 50-60 percent of people with ID and seizures also have behavioral problems. In one-third, the behaviors manifest as aggression, self-injury, screaming or shouting, and temper tantrums. Twenty-nine percent have an affective disorder. Are the behaviors due to seizures? Is the person trying to indicate that he is experiencing side effects of medications? Or is this the manifestation of a comorbid condition like depression? As with seizures in the intellectually impaired, where an accurate history may be lacking, the diagnosis of the underlying cause of the behavior problems can prove difficult.

### Seizures, Meds and Behaviors

In people with intellectual impairment, the cause of the behaviors is elusive. In some, it may be a manifestation of seizures. For instance, seizures may cause post-ictal psychosis. Though usually lasting hours to days, post-ictal psychiatric symptoms can last 3-4 weeks in some patients. A careful history from the family or the patient's caregiver might identify the association between seizures and behavioral worsening. To further complicate the matter, up to 40 percent of peo-



# EPILEPSY ESSENTIALS

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**Table 1. Causes of Intellectual Disability and Estimated Likelihood of Epilepsy (if Known)**

- Birth trauma
- CNS infection
- Intraventricular hemorrhage, likely due to prematurity (25-50 percent)
- Perinatal asphyxia (30-40 percent)
- Autism (29 percent)
- Cerebral palsy (30 percent)

ple with ID and epilepsy will experience non-epileptic, psychogenic events. In other words, in addition to the multiple seizure types that the person may have, there may be events that are psychological in origin. In these instances, video-EEG monitoring—aimed at recording the spectrum of the patient’s events—may be needed.

Medications may cause side effects. Some antiseizure medications cause psychiatric side effects such as anxiety, irritability and depression in people with normal intellect. Medications might amplify the issues that a person with ID and behavioral problems has at their baseline. Another possibility is that the medication is causing a more typical side effect such as dizziness. Someone who cannot articulate this, in an attempt to communicate their discomfort, might appear to have a worsening of behavior. The assumption that seizures are always the cause (*e.g.*, a post-ictal phenomenon) may result in an increase in medication, thereby worsening the problem.

## Epilepsy in Patients with ID

The same goal of treatment applies to those who are intellectually impaired: no seizures, and no side effects. When treating someone with epilepsy, it is reasonable to try the simplest regimen. When seizures are controlled, a simple regimen is likely to result in the least side effects. When medication is ineffective, epilepsy surgery may be an option. In addition, the ketogenic diet and the vagus nerve stimu-

lator should be considered.<sup>3</sup>

Because this population is more likely to experience refractory seizures, a combination of therapies often is needed for persons with epilepsy and ID. As in people with normal intellect, the best combination of treatments is not always apparent: there are no randomized clinical trials that address the optimal combination of therapies in this group. Instead, clinical judgment guides the clinician to the most appropriate solution.

The first step is to select a medication. The selection of medication is based on the type of seizure(s) that the person experiences. Because patients with ID often have multiple seizure types, broad spectrum agents are usually chosen (see Table 2).<sup>4,6</sup> When seizures are resistant to one medication, a combination of medications may be needed. As in selecting the first medication, the second medicine is chosen based on the seizure type or epilepsy syndrome.

The seizure type is not the only factor that helps to determine the medication. Comorbid conditions such as migraine or depression, both occurring more often in people with epilepsy, may help to select an optimal agent. For instance, if a person has multiple seizure types and depression, medications which are known to affect both seizures and mood should be selected. Lamotrigine and valproate have been shown to be effective for both seizure reduction and mood stabilization, so either of these would be possible choices.

Similarly, it is preferable to avoid agents which can worsen depression, such as phenobarbital. If a person with ID, depression and epilepsy were already on phenobarbital, eliminating this medication from their regimen, in favor of one that is unlikely to do the same, may result in improved quality of life.

A person with ID and epilepsy may be on many other medications. Often, these patients are given psychotropic medications in order to improve the behaviors. However, many of these have also been

reported to cause seizures. Tricyclic antidepressants and neuroleptic medications are two examples. Although both have been reported to cause seizures, this often occurs due to rapid titration or to high serum concentrations of drug. Serotonin specific reuptake inhibitors (SSRIs) are less likely to have this effect, and are widely used in people with seizures.

Kanner studied 80 patients with seizures taking venlafaxine, a medication that improves mood both through serotonergic and noradrenergic mechanisms. In this group, no one experienced a worsening of their seizures, suggesting its role in this population as well.<sup>1</sup> Of the neuroleptics, chlorpromazine has been reported to cause seizures at high doses (>1000 mg/day). Clozapine, at doses greater than 600mg/day causes seizures in 4.4 percent.<sup>1</sup> The other neuroleptics—such as haloperidol, fluphenazine and risperidone—infrequently cause seizures. Careful use of these medications, in combination with the antiseizure medication, may be needed in order to optimize quality of life.

When medications fail, alternative therapies should be considered. The vagus nerve stimulator has been shown to be effective against many seizure types.

**Table 2. AED Spectrum of Activity**

Like antibiotics, antiseizure medications can be thought of as either broad spectrum (works against a variety of seizure types, including partial and generalized from onset seizures) or narrow spectrum (mostly effective for one kind of seizure).

### Broad Spectrum:

Felbamate, lamotrigine, levetiracetam, topiramate, vagus nerve stimulator, valproate, zonisamide

### Narrow Spectrum – Partial Seizures:

Carbamazepine, gabapentin, oxcarbazepine, phenobarbital, phenytoin, pregabalin, primidone, tiagabine

### Narrow Spectrum – Absence Seizures:

Ethosuximide

Though not a medication, it is considered a “broad spectrum agent” for this reason. In addition, it was just approved by the Food and Drug Administration as an option for treatment-resistant depression. In situations where there are issues both with mood and seizures, the vagus nerve stimulator, perhaps in combination with medications that treat both illnesses, should be considered.

When considering epilepsy surgery or other invasive procedures, video-EEG monitoring should be performed. There are several reasons for this. First, there may be only one epileptogenic region. Monitoring will help to identify this, and will help to estimate the benefits of a surgical procedure. If the seizures are multifocal, resective surgery may no longer be an option; however, the vagus nerve stimulator may be an option. If the main seizure type is tonic or atonic, corpus callosotomy may be considered as a treat-

ment. Finally, as up to 40 percent of people with ID and epilepsy have non-epileptic seizures (they may have both epileptic and non-epileptic seizures), video-EEG will clarify which events may respond to the selected therapies.

### Conclusions

For people with seizures and intellectual disability, as with any epilepsy patient, the goal of treatment is to optimize quality of life. Medications are the mainstay of treatment. Although people with epilepsy and intellectual disabilities experience seizures that are more likely to be refractory to medicines, this fact does not equate with the notion that they are untreatable. When several medications (or combinations) have failed to control seizures, alternative therapies such as the ketogenic diet, the vagus nerve stimulator, and epilepsy surgery should be considered. Video-EEG monitoring may be needed in order to

identify those patients in whom resective surgery will be of most benefit. Although the diagnosis and treatment of seizures in this population is a challenge, thoughtful management of the person’s epilepsy and comorbid conditions can result in the best quality of life. **PN**

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