

The Face of Epilepsy

Segment I – Discovering Patterns

What is Epilepsy?

The term *epilepsy* refers to recurrent, unprovoked seizures (in other words, not provoked by fever, electrolyte imbalance, trauma, etc.). The term *seizure disorder* also is used to describe these recurrent seizures.

Seizures are episodes caused by abnormal electrical discharges of the brain leading to temporary disruption of brain function. They may result in altered consciousness, mental confusion, uncontrolled or aimless muscle and body movements, and loss of control over body functions such as bowel and bladder. They may also manifest as a change in behavior, such as a “blank stare”.

Episodes are often followed by a period of disorientation, confusion, drowsiness or sleep, which is called a *post-ictal* state.

A single occurrence of a seizure is not considered epilepsy. Febrile seizure, which is an episode associated with fever (e.g. temperature of 100.4 F or 30 degrees C, or greater) in children aged six months to six years, are not considered epilepsy either. During a febrile seizure, there are no associated central nervous system infections or problems.

Seizures are usually brief, lasting less than a minute, and there are several types. A person can have more than one type of seizure, and the pattern of seizures may change with time.

What Does Epilepsy Look Like?

There are two main types of seizures: **Generalized** and **Partial**.

Generalized Seizures begin with a discharge of neurons throughout the brain. Seizures may last from a few seconds to a few minutes. They can manifest in several forms:

- **Tonic-clonic seizures** (also called "grand mal") may occur at any age causing loss of consciousness and stiffening of the body, followed by jerking of the limbs. The person usually falls asleep or is disoriented or drowsy following a grand mal seizure.
- **Absence seizures** (also called "petit mal") are most common in children ages 6-14. They cause "blank spells" - a loss of awareness, staring, and possibly blinking and slight twitching. They may be mistaken for

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daydreaming or another type of seizure, specifically complex partial seizure.

- **Myoclonic seizures** cause brief muscle jerks strong enough to throw a person to the ground.
- **Infantile spasms** are sudden, jerking seizures during which an infant may bend at the waist or seem to reach up for support.
- **Atonic seizures** cause an individual to lose body tone and possibly slump to the ground.

Partial Seizures (Focal) begin with a discharge of neurons in just one part of the brain. Symptoms of partial epileptic seizures typically occur on one side of the body and the person doesn't lose consciousness. They include:

- **Simple partial seizures, which** may occur at any age and be limited to uncontrolled body movements. They may also involve brief changes in how things look, sound, taste or feel. They do not usually affect consciousness.
- **Complex partial seizures** which also may occur at any age. They can cause confusion or loss of awareness, and aimless movements (picking at one's clothes, lip-smacking, etc.).

Some Specific Types of Epilepsy

Epilepsy syndromes refer to groups of similar epileptic patterns which are based on seizure types, EEG, age of onset, outcome and other clinical signs. Here are a few examples of epileptic syndromes:

- **Landau Kleffner Syndrome** - seizures may be minimal or frequent, and are accompanied by loss of language. The cause is unknown, it may occasionally be due to encephalitis. Language deficits may not improve, and the patient may not be responsive to medication.
- **West Syndrome** - appears in children younger than one year. Myoclonic jerks (sudden involuntary muscle contractions) occur in clusters. Some known causes are tuberous sclerosis, CNS abnormality, and infection. Significant mental retardation is universal. Treatment may include medication, ketogenic diet or surgery.
- **Lennox Gastaut Syndrome** - the age of onset is one to three years. It includes multiple seizure types and often follows infantile spasms. Causes can be tuberous sclerosis, brain infection, trauma, or tumors. Mental retardation is common at onset and nearly universal within five

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years. Various treatments may be used, including medication and surgery.

- **Benign Rolandic Epilepsy** - occurs between three and thirteen years of age and may go into remission once the individual approaches adulthood. It appears predominantly in males.

What is Status Epilepticus?

Status epilepticus refers to prolonged, continuous seizures for five minutes or longer or recurrent seizures without full recovery of consciousness between seizures for 30 minutes. Status epilepticus represents a medical emergency. In 2/3 of cases, there is no history of epilepsy, but 4-16% of those with epilepsy will have at least one such episode.

The Diagnostic Detective

Epilepsy is diagnosed through a comprehensive neurological assessment which includes a detailed description of the seizures, any antecedents or associated illness, past medical history, family history, and physical evaluation. Additional testing will also be done, which may include an EEG (recording of the brain waves), blood studies, urine analysis, as well as a CT scan or MRI (to determine the structure of the brain).

Segment II – Class Dis-Mythed...Focus on Facts

What Epilepsy Is Not

Because epilepsy manifests in several ways, a number of myths have grown up around the disorder. And because it is so misunderstood, ignorance and myths about epilepsy often cause more problems for the individual than the condition itself. In fact, between seizures, a person with epilepsy is no different from anyone else.

Let's Dis-myth Them

- Epilepsy is not a disease, and should never be referred to as such
- It is not mental illness
- It is not contagious
- It is not a sign of low intelligence
- It is not usually inherited
- People with epilepsy are not violent during seizures
- People with epilepsy are not in danger of swallowing their tongues
- Seizures don't cause mental retardation
- Seizures are not a sign of possession by evil spirits

Segment III – Exploring the Unknown

What Are the Causes?

In many cases, we don't know what causes epilepsy. However, the causes we do know include brain anomaly, bleeding or tumors, infection (meningitis, encephalitis), stroke, and genetic disorders (Tuberous Sclerosis, Sturge Weber syndrome). In children, the common known causes are brain anomaly, infection, or a genetic disorder. In adults, the more common causes include stroke and brain tumor. There are also a few known epilepsy syndromes. Sometimes, no specific cause can be identified (referred to as *idiopathic*, which means unknown).

Events which may trigger seizures include lack of sleep, drug or alcohol abuse, poor nutrition, intercurrent illnesses, fatigue, flashing lights or photic stimulation, and missed medication.

What is the Incidence?

Epilepsy can affect anyone at any time – and currently affects more than two million Americans. It affects people of all nations and races. Of the 125,000 new cases each year, up to 50% are in children and adolescents. Seizures are the most common neurological disorders affecting children, and 5% of children have a seizure during childhood. Males are slightly more likely to have epilepsy than females.

Can It Be Prevented?

Some *causes* of seizures are preventable. For example, since some seizure disorders result from traumatic brain injuries, using helmets, seatbelts, car seats and other safety methods could prevent seizures by preventing injury. Similarly, obtaining all recommended immunizations against infectious diseases may prevent the seizures which can occur as a result of such diseases.

For individuals who already have seizures, there is also secondary prevention - which means minimizing the effects of an existing condition. This can be accomplished by working very closely with a neurologist to explore all possible options. Adherence to a management program for a seizure disorder through medications, surgery, diet, or vagus nerve stimulation, can reduce the incidence of seizures and their effects.

Segment IV – Reaching Beyond Syndromes to Treatment

What Are the Treatments?

Advances in the treatment of epilepsy continue to be made, and there are a variety of treatment options available, including:

- **Seizure medications** (also called anticonvulsants or antiepileptic medications) - There are many types available. Medications are still the first course of action, and can provide good control of seizures for up to 60% of individuals with seizure disorders. They do have several common side effects such as drowsiness, seeing double and lack of coordination. Specific drugs may cause weight gain or weight loss, overgrowth of gums, rash, etc.

For patients who do not experience seizure control (refractory seizures) despite the use of anticonvulsant medication, other types of treatment may result in better control:

- **Ketogenic Diet** - in some cases, seizures that are not controlled by medication are treated with a high-fat, low-carbohydrate/low protein diet. This works best in children aged 1 to 8 years without brain lesion (idiopathic epilepsy). The diet does not appear to be effective in adults.
- **Surgery** - this may be used when seizures that are not controlled by medication arise from a single, small part of the brain. Epilepsy surgery involves removal of a portion (lobectomy; corpus callosotomy), or half of the brain (hemispherectomy).
- **Vagus nerve stimulation** - refers to an implantable stimulator in the chest to inhibit seizure activity.

What To Do and Not To Do During Seizures?

- **Do** remain calm and take steps to prevent injury (i.e., protect the patient from nearby hazards).
- **Don't** try to put or force anything into the patient's mouth.
- **Don't** throw water on the patient or try to give anything to drink.
- **Don't** try to restrain the patient unless he or she is in danger of hurting him or herself.

Segment V – Ask the Experts

What Research is Being Conducted?

Continuous investigation is being conducted in search of new and better anticonvulsant medications, as well as better techniques and technology for evaluating seizures.

Researchers have also been studying the various surgical approaches to the management of epilepsy.

Segment VI – Understanding People, Exploring Possibilities

Today, most people with epilepsy can keep their seizures under control either completely or to some degree through continuing treatment. They learn to accept their condition and fulfill their potential. The vast majority can lead active, self-supporting, normal lives. Lack of understanding due to ignorance and fear is the most difficult part for individuals with epilepsy.

Most activities are not affected - even driving if the seizures are fully controlled. In some children, absence epilepsy goes into remission during adolescence and never reappears. In many instances, people can marry and have children with little risk of passing on the conditions. Genetic counseling would be appropriate if there's a family history of epilepsy, or the cause of epilepsy is genetic in nature.

While epilepsy cannot yet be cured, people can manage their situation and live full, happy, productive lives.