

6.2.3

Seizures

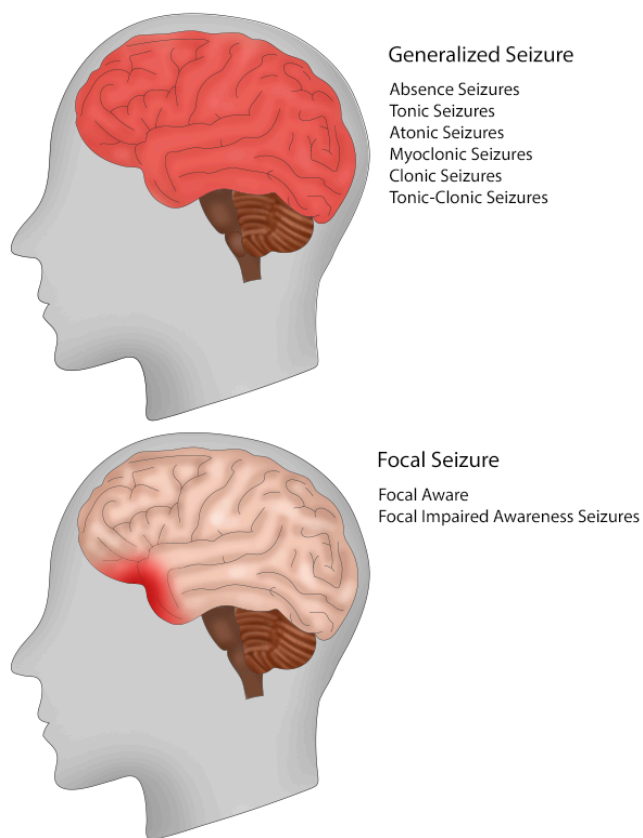
A seizure is a sudden burst of uncontrolled electrical activity in the brain that can include sensory, motor, and psychic manifestations. It can cause changes in behavior, movement, and levels of consciousness. Seizures may include convulsions, which are sudden, irregular, and rapid movements of the limbs or body due to involuntary muscle contraction. There are two main types of seizures:

1. **Provoked seizures** are those that have an identifiable cause. Some common causes of provoked seizures are illnesses that affect the brain such as metabolic derangements, infections, tumors, and vascular lesions. Drugs and brain injury can cause seizures as well.
2. **Unprovoked seizures** have no identifiable cause. **Epilepsy** is a condition of recurrent unprovoked seizures. There are two categories of epileptic seizures: focal seizures and generalized seizures. We will discuss these categories in detail now.

Focal Seizures

Focal seizures are epileptic seizures that begin in a specific or focal area of one cerebral hemisphere. There are two types of focal seizures: those that occur without impairment of consciousness or awareness, and those that occur with impairment.

- **Focal aware seizure:** These seizures used to be called “simple partial seizures.” This type of seizure occurs in one hemisphere. When people have this type of seizure they are awake and aware. They can even recall events that occur during the seizure. Sometimes, the person may be “frozen” (not moving or responding) during the seizure. This lasts a short time of less than 2 minutes. Other manifestations during a seizure like this may include sudden feelings of irrational fear, anger, sadness, happiness, or nausea. Some individuals may report a feeling of falling or movement. Unusual sensations like change in taste, smell, hearing, or tingling have been reported. Visual disturbances are possible. A sudden feeling of déjà vu is quite common and labored speech may occur. Many of these symptoms are similar to what individuals can experience with an “aura” that precedes a migraine headache. An aura is a temporary neurological experience that can involve any of the focal seizure manifestations above. The aura is generally followed by a migraine headache or any of the seizures mentioned here.
- **Focal impaired awareness seizure:** This seizure type was previously called a “complex partial seizure.” This type of seizure also begins in one focal area of the brain in one hemisphere. If a person loses consciousness or is not aware of their surroundings during any part of a focal seizure, it is called a focal impaired awareness seizure. This type of seizure is often preceded by a focal aware seizure. Similar to a focal aware seizure, this type can occur after an aura as well. A focal impaired awareness seizure may develop into a generalized seizure. Manifestation of this type of seizure may involve any that were mentioned for focal aware seizures, although it is most common that the individual simply stares off into space and is unresponsive to questions for 1-2 minutes. If there are any abnormal sensations that accompany the seizure, the patient may not remember them after the seizure ends. This type of seizure is quite similar to a generalized absence seizure, however focal impaired awareness seizures generally come on a bit slower than absence seizures (which can be quite abrupt) and they tend to last longer. Also, there is more postictal confusion with a focal impaired awareness seizure.



Generalized vs Focal Seizures *Image by Becky Torgerson BYU-Idaho F19*

Generalized Seizures

Generalized seizures are epileptic seizures that involve both hemispheres of the brain. They can be preceded by focal seizures. There are various types classified based off of symptoms:

- **Absence seizures** (also known as “petit mal seizures”) involve a short period of time in which a patient loses their sense of awareness, or “spaces out.” Absence seizures are more common in children between the ages of 4 and 14 and usually lasts 20 to 30 seconds. They start and end suddenly and during the seizure, the individual will not respond to interactions. There are two subtypes of absence seizures known as typical and atypical. Atypical absence seizures are different than typical absence seizures because they have greater alterations in muscle tone and less abrupt onset and cessation.
- **Tonic seizures** manifest themselves when the muscles suddenly stiffen. Tonic seizures are common while sleeping and are associated with a loss of consciousness. These seizures usually last about 20 seconds.
- **Atonic seizures** manifest themselves when the muscles suddenly become limp. Part or all of the body loses muscle tone and a person may collapse if they are standing up. These seizures are sometimes referred to as “drop seizures” or “drop attacks.” They usually only last about 15 seconds.
- **Myoclonic seizures** involve brief, quick jerks in the arms or legs. Usually they don’t last more than a second or two and the individual is fully awake and aware. If you have ever had a sudden unexplained jerking movement in your arm or leg while starting to fall asleep, you would know what this type of seizure would look and feel like.
- **Clonic seizures** involve sudden and repeated jerky muscle movement that lasts a few seconds to a minute. “Clonic” means sustained rhythmic jerking. These movements cannot be stopped by restraining a person. A clonic seizure is different from a myoclonic seizure because the jerking is more rhythmic and sustained. Clonic seizures are rare. It is more common to have muscle stiffening before the clonic phase known as a tonic-clonic seizure.
- **Tonic-clonic seizures** have also been called “grand mal seizures.” These seizures are what most people think of when they imagine epilepsy. As implied in the name, they combine the characteristics of tonic and clonic seizures. First, in the tonic stage, muscles stiffen and air being forced past the vocal cords may cause the individual to groan. Consciousness is also lost and the person will fall. Then the clonic stage follows where the arms and sometimes legs begin jerking or twitching quickly and repeatedly. A person experiencing this type of seizure should be rolled to their side to avoid fluids entering the lungs if they vomit or salivate a lot. As the body relaxes following the clonic phase, a person may lose control of their bladder. Consciousness then returns slowly and afterward the person may be confused, sleepy, irritable, or depressed. Tonic-clonic seizures can last only a minute or two or over 5 minutes. A seizure like this in which the clonic phase lasts longer than 5 minutes becomes a medical emergency and professional medical help should be acquired.

There are a variety of medications available to treat seizures. It is important to diagnose the type of seizure before beginning treatment because not all types of seizures respond to medication in the same way.



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