

Epilepsy



It is a group of neurological disorders characterized by epileptic seizures. Epilepsy is a problem with brain's electrical system. Electrical impulses cause brief changes in movement, behaviour, feeling or awareness. These events known as seizures, may last from few seconds to few minutes. People who have had two or more seizures without obvious triggers separated by at least 24 hours are considered to have epilepsy. The cause of most cases of epilepsy

is unknown, although some people develop epilepsy as the result of brain injury, stroke, brain tumor, and drug and alcohol misuse. Genetic mutations are linked to a small proportion of the disease. Epileptic seizures are the result of excessive and abnormal cortical nerve cell activity in the brain. The diagnosis typically involves ruling out other conditions that might cause similar symptoms such as fainting. Additionally, making the diagnosis involves determining if any other cause of seizures is present such as alcohol withdrawal or electrolyte problems. This may be done by imaging the brain and performing blood tests. Epilepsy can often be confirmed with an electroencephalogram (EEG) but a normal test does not rule out the condition.

A person is diagnosed with epilepsy if they have had at least two seizures that were not caused by some known and reversible medical condition like alcohol withdrawal or extremely low blood sugar. The seizures in epilepsy may be related to a brain injury or a family tendency, but often the cause is completely unknown. The word "epilepsy" does not indicate anything about the cause of the person's seizures or their severity.

Symptoms

Epilepsy is characterized by a long-term risk of recurrent seizures. These seizures may present in several ways depending on the part of the brain involved and the person's age.

Seizures: The most common type (60%) of seizures are convulsive. Of these, one-third begin as generalized seizures from the start, affecting both hemispheres of the brain. Two-thirds begin as partial seizures (which affect one hemisphere of the brain) which may then progress to generalized seizures. The remaining 40% of seizures are non-convulsive. An example of this type is the absence seizure which presents as a decreased level of consciousness and usually lasts about 10 seconds.

Tonic-clonic seizures present with a contraction of the limbs followed by their extension along with arching of the back which lasts 10–30 seconds (the tonic phase). A cry may be heard due to contraction of the chest muscles. This is then followed by a shaking of the limbs in unison (clonic phase). Tonic seizures produce constant contractions of the muscles. A person often turns blue as breathing is stopped. In clonic seizures there is shaking of the limbs in unison. After the shaking has stopped it may take 10–30 minutes for the person to return to normal; this period is called the "postictal state" or "postictal phase". Loss of bowel or bladder control may occur during a seizure. The tongue may be bitten at either the tip or on the sides during a seizure. In tonic-clonic seizure, bites to the sides are more common. Tongue bites are also relatively common in psychogenic non-epileptic seizures.

Postictal: After the active portion of a seizure, there is typically a period of confusion referred to as the postictal period before a normal level of consciousness returns. This usually lasts 3 to 15 minutes but may last for hours. Other common symptoms include feeling tired, headache, difficulty speaking, and abnormal behavior. Psychosis after a seizure is relatively common, occurring in 6–10% of people. Often people do not remember what happened during this time. Localized weakness, known as Todd's paralysis, may also occur after a partial seizure. When it occurs it typically lasts for seconds to minutes but may rarely last for a day or two.

Psychosocial: Epilepsy can have adverse effects on social and psychological well-being. These effects may include social isolation, stigmatization, or disability. They may result in lower educational achievement and worse employment outcomes. Learning difficulties are common in those with the condition, and especially among children with epilepsy. The stigma of epilepsy can also affect the families of those with the disease.

Causes

The causes of epilepsy can either be genetic or acquired. Causes of epilepsy vary by age of the person. Some people with no clear cause of epilepsy may have a genetic cause. But what's true for every age is that the cause is unknown for about half of everyone with epilepsy.

- Some people with no known cause of epilepsy may have a genetic form of epilepsy. One or more genes may cause the epilepsy or epilepsy may be caused by the way some genes work in the brain. The relationship between genes and seizures can be very complex and genetic testing is not available yet for many forms of epilepsy.
- About 3 out of 10 people have a change in the structure of their brains that causes the electrical storms of seizures.
- Some young children may be born with a structural change in an area of the brain that gives rise to seizures.

- About 3 out of 10 children with autism spectrum disorder may also have seizures. The exact cause and relationship is still not clear.

- Infections of the brain are also common causes of epilepsy. The initial infections are treated with medication, but the infection can leave scarring on the brain that causes seizures at a later time.

- People of all ages can have head injuries, though severe head injuries happen most often in young adults.

- In middle age, strokes, tumors and injuries are more frequent.

- In people over 65, stroke is the most common cause of new onset seizures. Other conditions such as Alzheimer’s disease or other conditions that affect brain function can also cause seizures.

In Newborns	In Infants and Children	In Children and Adults	In Seniors
Brain malformations	Fever (febrile seizures)	Congenital conditions (Down's syndrome; Angelman's syndrome; tuberous sclerosis and neurofibromatosis)	Stroke
Lack of oxygen during birth	•Brain tumor (rarely)	Genetic factors	•Alzheimer's disease
Low levels of blood sugar, blood calcium, blood magnesium or other electrolyte disturbances	•Infections	Progressive brain disease (rare)	•Trauma
Inborn errors of metabolism	—	Head trauma	—
Intracranial hemorrhage	—	—	—

Treatment

Rolling a person with an active tonic-clonic seizure onto their side and into the recovery position helps prevent fluids from getting into the lungs. Putting fingers, a bite block or tongue depressor in the mouth is not recommended as it might make the person vomit or result in the rescuer being bitten. Efforts should be taken to prevent further self-injury. Spinal precautions are generally not needed.

If a seizure lasts longer than 5 minutes or if there are more than two seizures in an hour without a return to a normal level of consciousness between them, it is considered a

medical emergency known as status epilepticus. This may require medical help to keep the airway open a nasopharyngeal airway may be useful for this. At home the recommended initial medication for seizure of a long duration is midazolam placed in the mouth. Diazepam may also be used rectally.

Medications

Anticonvulsants

The mainstay treatment of epilepsy is anticonvulsants. Medications, possibly for the person's entire life The choice of anticonvulsant is based on seizure type, epilepsy syndrome, other medications used, other health problems, and the person's age and lifestyle. A single medication is recommended initially, if this is not effective, switching to a single other medication is recommended. Two medications at once is recommended only if a single medication does not work. In about half, the first agent is effective; a second single agent helps in about 13% and a third or two agents at the same time may help an additional 4%. About 30% of people continue to have seizures despite anticonvulsant treatment.

Adverse effects from medications are reported in 10 to 90% of people, depending on how and from whom the data is collected. Most adverse effects are dose-related and mild. Some examples include mood changes, sleepiness, or an unsteadiness in gait. Certain medications have side effects that are not related to dose such as rashes, liver toxicity, or suppression of bone marrow. Up to a quarter of people stop treatment due to adverse effects. Some medications are associated with birth defects when used in pregnancy. Valproate is of particular concern, especially during the first trimester. Despite this, treatment is often continued once effective, because the risk of untreated epilepsy is believed to be greater than the risk of the medications.

Slowly stopping medications may be reasonable in some people who do not have a seizure for two to four years; however, around a third of people have a recurrence, most often during the first six months. Stopping is possible in about 70% of children and 60% of adults.

Surgery

Epilepsy surgery may be an option for people with partial seizures that remain a problem despite other treatments. These other treatments include at least a trial of two or three medications. The goal of surgery is total control of seizures and this may be achieved in 60–70% of cases.

Reference

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