

Seizure Classification

The brain is made up of millions of nerve cells called *neurons*. They generate electrical impulses and messages to produce thoughts, feelings and movement. A seizure occurs when the normal pattern of these impulses is disrupted, caused by the neurons rapidly firing all at once. This can cause changes in sensation, awareness, movement and behaviour, or sometimes convulsions, or loss of consciousness, depending on where the seizure starts and spreads in the brain.

There are many different types of seizures. Having some basic knowledge about seizures can help to recognise them and know what to do when a seizure occurs. Most seizures fall into three groups, focal, generalised and unknown onset seizures.

Focal onset seizures

Focal seizures can be subtle or unusual and often go unnoticed or be confused with other events. They occur in one small area of the brain and can sometimes spread to other parts of the brain. If the seizure does spread, it can evolve to become a tonic clonic seizure. Focal seizures may or may not affect someone's awareness or consciousness. Focal seizures account for about 60 percent of all epileptic seizures.

Focal aware seizures

With focal aware seizures, the person retains awareness and is conscious of what is happening. These seizures are sometimes termed an 'aura' or warning as they can occur immediately before a more significant seizure; or they may just happen in isolation. They usually brief and can include an vast array of symptoms such as:

- *Sensory* changes such as numbness, tingling or burning sensation in a region of the body
- *Movement* such as jerking or positioning of a limb, twitching of the face
- *Autonomic* changes such as blushing, pallor, racing heart-rate, nausea
- *Emotions* such as fear, anxiety or panic
- *Cognitive* changes such as déjà vu, hallucinations (visual, sound, taste or smell)

Focal seizures – impaired awareness

These seizures can vary greatly, depending on where they start and spread within the brain. These are only a few signs of what you may see. The person may look vacant, frightened or confused. Their awareness is impaired, so they may or may not respond to you, or they may respond inappropriately. Sometimes people will have unusual and repetitive behaviours. Some of these behaviours include chewing, fidgeting, walking around or mumbling.

Focal seizures can last approximately 30 seconds to three minutes and there is often a short period of confusion after the seizure.

Both types of focal seizures can spread to become a bilateral tonic clonic seizure.



Generalised onset seizures

Generalised onset means the seizure affects both hemispheres (sides) of the brain from the onset. Because of this, you lose consciousness or awareness at the start of the seizure. There are a number of different types of generalised onset seizures.

Generalised tonic clonic seizures

These are the most recognised of seizures. They begin with a sudden loss of consciousness and often the person will cry out. The body will stiffen (tonic) and this is followed by jerking of the muscles (clonic).

During the seizure, breathing is affected causing the lips and complexion to look grey/bluish. There is usually excess saliva, sometimes blood if the tongue or cheek has been bitten. There may be loss of bladder control.

This seizure type can last up to two minutes and is often followed by a period of confusion, and sleep. Headaches and soreness are also common afterwards. The persons colour and breathing should return to normal within a minute or two.

Absence seizures

These seizures usually start in childhood (but can occur in adults) and can be mistaken for daydreaming and inattentiveness.

Absence seizures are very brief and start and end suddenly. You will notice the person staring, lose facial expression, become unresponsive and stop what they are doing. Sometimes eye blinking or upward eye movements are seen. They generally last approximately 2 to 20 seconds and recovery is immediate with the person resuming their previous activity.

Absence seizures may occur multiple times a day, which can create gaps and disrupt learning if not managed. Many children outgrow this seizure type by puberty.

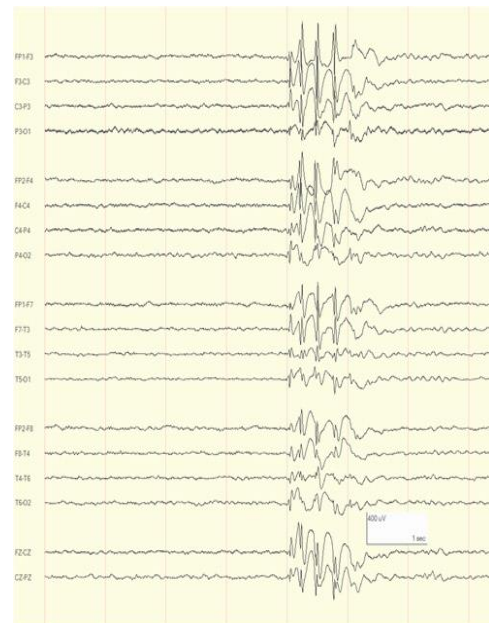
There are other types of less-commonly seen absence seizures seen in more complex epilepsies.

Myoclonic seizures

A myoclonic seizure is a seizure where a single muscle jerk or series of single muscle jerks occur. They mostly affect the upper body, neck shoulders and arms.

A person having a myoclonic seizure usually has a sudden jerk on both sides of the body at the same time. They vary in severity but can cause someone to spill or drop what they are holding. If severe enough, a myoclonic seizure can also cause a fall. The seizures are sometimes mistaken for clumsiness before diagnosis.

We all experience myoclonus or sudden jerks upon falling asleep from time to time but these are normal and not seizures.



Generalised onset seizures continued.....

Tonic seizures

A tonic seizure causes increased muscle tone of the body. They are usually very brief, lasting a few seconds and if the person is standing, they will suddenly fall stiffly to the ground. Which is why they are often termed a "drop seizures". Recovery is swift but injuries can be sustained.

Tonic seizures also occur during sleep and in clusters of varying intensity. The person and family are often unaware of these. Tonic seizures during sleep may cause the person to make an exhalation or loud sigh sound.

Tonic seizures often occur in people with intellectual impairment or more complex epilepsies.

Atonic seizures

An atonic seizure is a type of seizure that involves the sudden loss of muscle tone. If standing, this can cause the person to suddenly slump to the ground which is why they are also called "drop seizures". If sitting, a simple head nod (as if the person is trying to fight off sleep) may be seen. These seizures are very brief, less than 2 seconds and may involve the head, body or limbs. Recovery is swift but injuries can be sustained.

Atonic seizures often occur in people with intellectual impairment or more complex epilepsies.

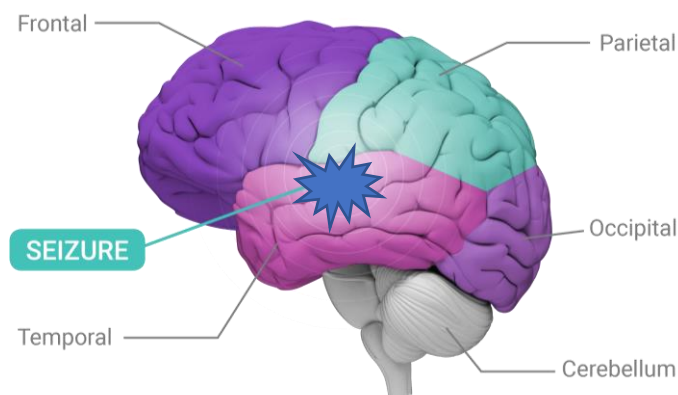
Unknown Onset

This is a grouping of seizures that cannot be diagnosed as either a focal or generalised seizure and are thus grouped as unknown.

Unknown onset seizures are not truly separate types of seizures, but rather a temporary classification for seizure types for which the onset is unknown. When more information becomes available over time or through further testing, the type of seizure may be changed to a generalised or focal onset seizure.

This classification of seizures is when a seizure is unable to be classified due to either:

- not enough information or
- an unusual nature of the seizure, or
- unable to classify the seizure as either focal or generalised onset.



Important points to remember about seizures:

- Seizures may look different than you expect. Not all seizures involve jerking or convulsions.
- Most seizures last less than two minutes, although there may be a period of confusion afterwards.
- Occasionally confusion after a seizure can be prolonged, lasting up to several hours, but mostly it is over in less than 5 minutes
- Tiredness often follows a seizure, especially a tonic clonic seizure, and rest or sleep is needed.
- Seizures cannot be stopped or slowed by restraint. The brain almost always stops the seizures on its own.
- It is physically impossible to swallow the tongue so there is no need to insert anything into a person's mouth. Doing this is dangerous and fingers may be bitten, or teeth broken.
- After seizures, most people have little memory, if any about what has happened.
- In seizure emergencies, specific medications can be prescribed to stop prolonged seizures.
- Seizures can sometimes cause injury or be life threatening.
- Seizure first aid is easy. Make sure you know what to do.

References:

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