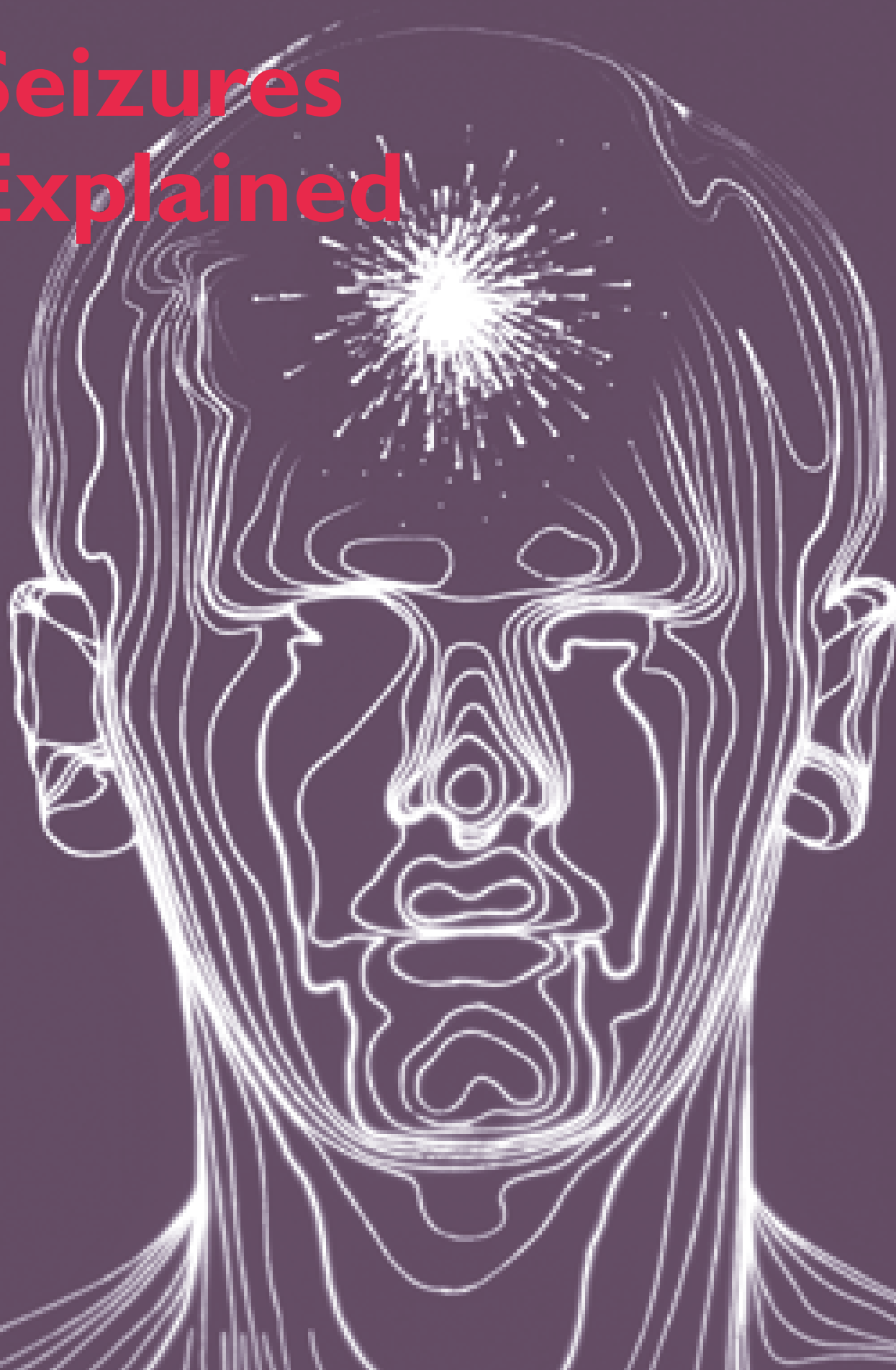


# Seizures Explained



## Introduction

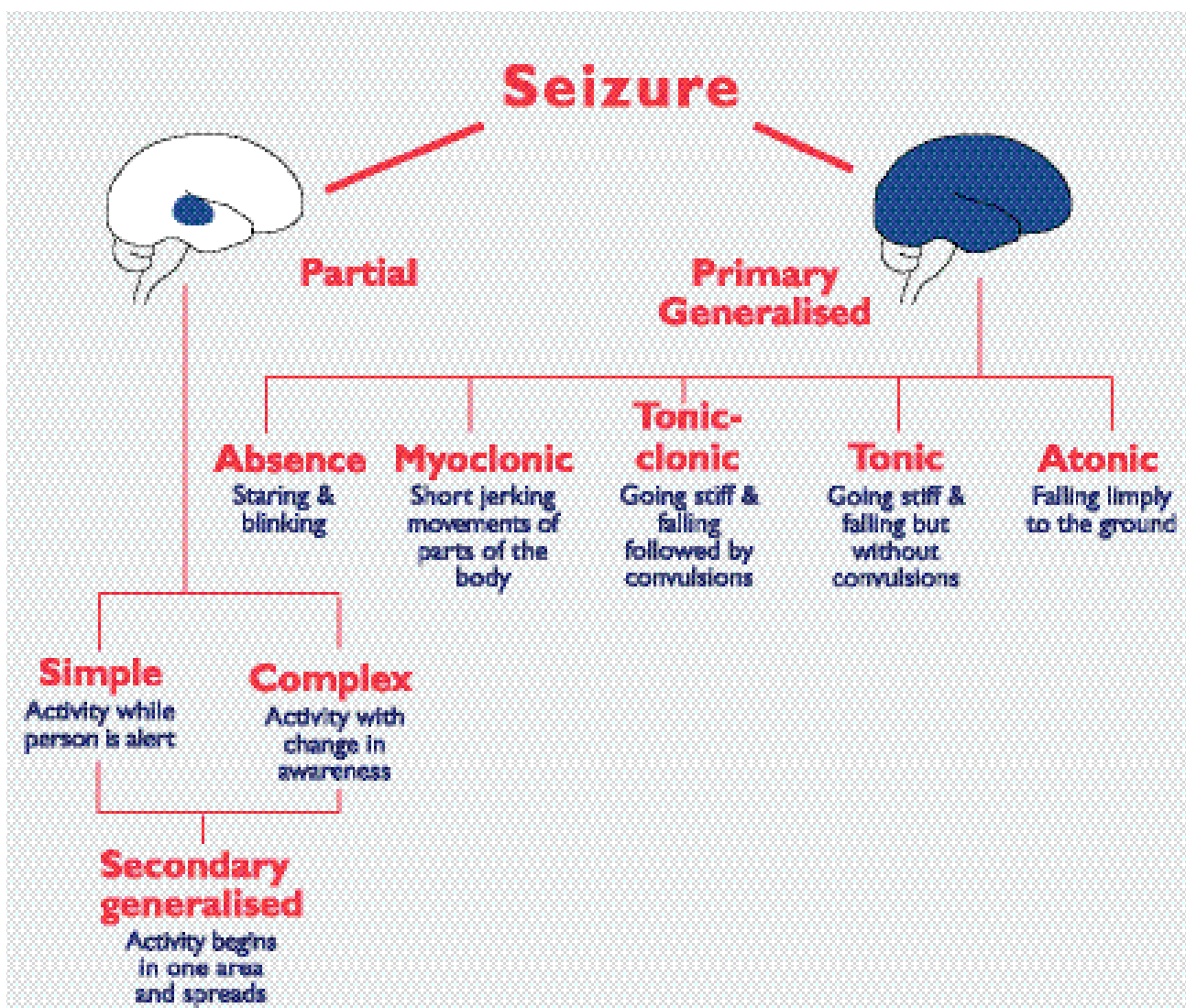
Ask most people with little personal experience of epilepsy to describe an epileptic seizure and they will talk of someone going stiff, falling to the ground and having convulsions. True, this is a seizure, a typical tonic-clonic seizure to be exact, but it is only one of over forty different types of epileptic seizure.

## Terminology

When giving a diagnosis of epilepsy, the doctor may use one of the following terms: idiopathic, cryptogenic or symptomatic. Idiopathic means there is no apparent cause, cryptogenic means there is likely to be a cause but it has not been identified and symptomatic means that a cause has been identified.

Seizures can be classified into partial and generalised - partial seizures involve epileptic activity in part of the brain, while generalised seizures involve epileptic activity in all or most of the brain.

## Seizure Map



## Partial Seizures

Partial seizures only involve part of the brain. They can be split into two types: simple partial and complex partial.

### Simple partial

In this type of seizure a person remains fully conscious. However, this does not mean that a person experiencing this type of seizure is able to stop or control the seizure. Simple partial seizures can present themselves in a variety of ways depending on where in the brain the epileptic activity is occurring. Examples of symptoms are the movement of a limb; tingling; experiencing a smell or taste; going pale or sweating.

Because people experiencing simple partial seizures remain fully aware of what is happening, they can find the experience distressing.

### Complex partial

In this type of seizure a person is only partially conscious. This does not mean the person collapses but it does mean they will not remember the seizure, or their memory of it will be distorted. It may appear to onlookers that the person is fully aware of what they are doing. However, this is not the case.

Complex partial seizures can take the form of automatisms such as chewing and swallowing, repeatedly scratching the head or searching for an object. Some people may undress. Occasionally, a person may wander off and recover full awareness minutes or even hours later, unable to remember anything. It is important not to restrain the person during a seizure as this could be confusing and upsetting for them. Stay with them, offer reassurance, and remember that they may need some time to fully recover.





The epileptic activity causing a complex partial seizure can spread to the rest of the brain, resulting in a secondary generalised tonic-clonic seizure. If the progression happens quickly it may appear to be a straightforward tonic-clonic seizure - all adding to the difficulties doctors face when trying to make a diagnosis of seizure types.

## **Partial seizures & the different areas of the brain**

### **The temporal lobes**

Partial seizures can occur as a result of epileptic activity in any part of the brain but they most commonly begin in the temporal lobes. Each person has a right temporal lobe and a left temporal lobe.

It is thought that the most common cause of epilepsy starting in this area is scarring on the brain. This could be as a result of head injury, infection, or lack of oxygen. The temporal lobes are the most common site of small malformations which would not be noticed if they did not cause epilepsy.

The temporal lobes are responsible for many functions. Some examples are taking in and remembering information, emotional responses, receiving sound and smell and the production of speech.

Typical symptoms of epileptic activity in the temporal lobes are flushing or sweating, going very pale, or experiencing a churning feeling in the stomach. How people see things can be affected. For example, some people think things are smaller or bigger than they really are while other people experience hallucinations. This does not only mean seeing things that are not really there, it can also mean smelling non-existent odours, having an unusual taste or hearing something that others cannot. Other symptoms can be feelings of fear, panic, sadness or happiness, or feeling detached from one's environment. This can be frightening and difficult to explain to others. A common symptom is the experience we all know as *deja vu*, when we are convinced we have been somewhere or witnessed something before. The opposite can also happen in that some people find very familiar things become unrecognisable.

## The frontal lobe

Because the frontal lobe deals mainly with movement, seizures starting here are sometimes called 'motor seizures'. The person may feel their head drawn to one side, sometimes their arm or hand becomes stiff and is drawn upwards. When jerking or trembling movements begin in a finger and then slowly march upwards to the whole hand and arm it is referred to as a Jacksonian seizure, named after a famous neurologist, Hughlings Jackson. After this type of seizure, which is usually only brief, the person can experience a short period of weakness. In rare instances people can be briefly paralysed and this is known as 'Todd's Paralysis' or 'Todd's Paresis'. This is named after Robert Bentley Todd, a nineteenth century physician.

Sometimes the seizures can involve complex body movements, apparently strange behaviour or actions of a sexual nature.



## The parietal lobe

The parietal lobe deals with our bodily sensations, and simple partial seizures beginning in this part of the brain cause strange physical sensations. A tingling or warmth down one side of the body is typical. Because the parietal lobe is next to the frontal lobe, people sometimes experience movement too.

Known as 'sensory seizures' the after-effect can be a period of numbness which gradually wears off.

## The occipital lobe

The fourth area of the brain which can be the source of partial seizures is the occipital lobe, responsible for our vision. It follows, therefore, that the symptoms of these seizures are to do with the way we see things. Seeing flashing or balls of light or experiencing temporary absence of vision are typical symptoms.



## Secondary generalisation

Sometimes, the activity that starts as a simple partial or complex partial seizure (see above) can spread to the whole brain resulting in a tonic-clonic seizure. This is known as a secondary generalised seizure. Often the person will experience the simple partial seizure as an 'aura', or warning, but sometimes the spread of epileptic activity can be so quick that the person appears to go straight into a tonic-clonic seizure.

## Primary generalised seizures

Generalised seizures involve all or most of the brain.

Tonic-clonic seizures affect the whole brain. Other generalised seizures are caused by epileptic activity in both halves of the brain, but sometimes this activity misses a small part of the brain. The four main types of generalised seizure are absences, myoclonic jerks, tonic and atonic seizures.

## Tonic-clonic seizures

The most common generalised seizure is called a tonic-clonic seizure, the most widely recognised epileptic seizure.

The person loses consciousness, goes stiff, falls to the ground, their limbs jerk, after which they become still before regaining consciousness.

The tonic part of the seizure refers to when the person goes stiff. This happens because all the body's muscles contract. Because the muscles in the lungs also contract, forcing out air, sometimes the person appears to cry out. Breathing may become irregular with the result that there is not enough oxygen in the lungs. Because of this, the blood circulating in the body is less red





than usual, causing the skin (particularly around the mouth and under the finger nails) to appear blue in colour. This is called cyanosis. Occasionally, if the person's bladder is full, they may urinate. In some cases there can be loss of bowel control.

After the tonic phase has passed the clonic phase of the seizure begins. This refers to the jerking movements. The limbs jerk because now the muscles contract and relax in quick succession. During this period the person may bite their tongue and the inside of their cheeks. It is not possible to stop the seizure and no attempts should be made to restrict the person's movements as this could cause injury to their limbs.

After a further minute or so, the muscles relax and the person's body goes limp. Slowly they will regain consciousness, but may well be groggy or confused. They will gradually return to normal but may not be able to remember anything for a while. Very often, the person remains sleepy and may have a headache and



aching limbs. Recovery time differs from person to person; some will quickly want to get back to their daily routine, some will need a short sleep and others will require plenty of rest. It is advisable to let the person sleep for as long as they need. The whole seizure usually only lasts a minute or two. However, if a seizure lasts more than five minutes or if it is the first time the person has had a seizure, or if injury has occurred, medical assistance should be called for at once.



## Absence seizures

These seizures used to be called petit mal, which roughly translated means small illness. This name makes them sound fairly harmless and, for many, they are little more than an occasional nuisance. However, when they occur frequently they can make life very confusing for the person concerned.

During an absence seizure it can appear to onlookers that the person is daydreaming or switching off, something many of us do when we are bored or distracted. However, in an absence seizure, the person cannot be alerted or woken up; they are momentarily unconscious and therefore totally unaware of what is happening around them.

Absence seizures are most common in childhood, particularly between the ages of six and 12. Girls are more prone to absences than boys. Absence seizures are very rare in adults.



Like many generalised seizures, doctors can rarely say why a child develops absences, although between 25 and 40 per cent of children with absences have relatives who have experienced similar seizures.

Because most children tend to daydream or wander off into a world of their own at times, absences can be very hard to spot. Parents and teachers tend to lose patience with children unless it becomes obvious that something more serious is happening. In the worst cases, children can be having hundreds of very brief absence seizures a day, effectively preventing them from learning and taking part in school or family activities. These children are missing out on tiny pieces of information; they might hear the first part of a sentence but not the end; hear the instruction to go out and play but not when to be back. This can easily be misinterpreted as misbehaviour.

## Myoclonic seizures or jerks

Most of us have experienced a sudden jerk as we are falling asleep or have jumped when someone leaps out at us unexpectedly. This is similar to the jerks experienced by someone who has myoclonic seizures. The term myoclonic comes from myo meaning muscle, and clonus meaning jerk.

Myoclonic seizures are caused by a sudden contraction of the muscles. They can affect the whole body, but are usually restricted to one or both arms and sometimes the head. As in absence seizures, the person is not conscious, but the seizure is so brief that the person appears to remain fully conscious.

Myoclonic jerks occur most frequently in the morning. Although the seizures are brief, they can be extremely frustrating. For example, they can often result in spilt drinks or similar accidents.



## Tonic and atonic seizures

Tonic seizures result in all the muscles contracting. The body stiffens and the person will fall over if unsupported.

Atonic seizures (also called ‘akinetic’ seizures) are, in a way, the opposite of tonic seizures. Instead of the body going stiff, all muscle tone is lost and the person simply drops to the ground, hence their other name, ‘drop attacks’. Although the person falls heavily, they are usually able to get up again straight away. When the body goes limp it inevitably falls forward and there is a risk of damage to the brain caused by banging the head on furniture, for example.

For those who have frequent tonic or atonic seizures, extra safety precautions - such as protective headgear - make sense. Epilepsy Action can provide further information on this.

## Conclusion

In this leaflet, we have looked at the most common types of seizure. It is worth remembering that everybody's seizures are unique to them. Just because seizures appear to be similar to someone else's does not mean that they have the same cause or should be medically treated in the same way.

Epilepsy Services

Epilepsy Action

January 2004



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How useful have you found this publication?

- ☐ Very      ☐ Fairly      ☐ Quite      ☐ Not at all

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# Epilepsy Services

## How to contact us:

Telephone the freephone Epilepsy Helpline **0808 800 5050**

Monday to Thursday 9.00 am to 4.30 pm

Friday 9.00 am to 4.00 pm

Our Helpline staff are Typetalk trained

Fax your enquiry to us free of charge on **0808 800 5555**

Write to us free of charge at

**FREEPOST LS0995, Leeds, LS19 7YY**

Email us at the following address

**[helpline@epilepsy.org.uk](mailto:helpline@epilepsy.org.uk)**

Information on a number of epilepsy related subjects is  
available from us in the following formats:

leaflets, factsheets, books, videos, CD-ROM and audiotape.

Information is also available in Braille, Moon and large text.

In partnership with the organisation Language Line, the Helpline is able  
to offer advice and information in over 120 languages.

We provide confidential advice and information to anyone  
living with epilepsy but we will not tell them what to do.

We can give general medical information but cannot offer a  
medical diagnosis or suggest treatment. We can give general  
information on legal and welfare benefit issues specifically related to  
epilepsy. We cannot, however, take up people's  
cases on their behalf.

*To ensure the quality of our services we may  
monitor calls to the helpline.*



Epilepsy Action aims to improve the quality of life and promote the interests of people living with epilepsy.

**Our work includes:**

- providing information to anyone with an interest in epilepsy
- improving the understanding of epilepsy in schools and raising educational standards
- working to give people with epilepsy a fair chance of finding and keeping a job
- raising standards of care through contact with doctors, nurses, social workers, government and other organisations
- promoting equality of access to quality care

Epilepsy Action has local branches in most parts of the UK. Each branch offers support to local people and raises money to help ensure our work can continue.

**Join us...**

You can help us in our vital work by becoming a member. All members receive our magazine *Epilepsy Today*, free cover under our unique personal accident insurance scheme and access to our services and conferences.

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