Medical Encyclopedia

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Temporal lobe seizure

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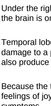
Illustrations



Central nervous system

Alternative Names

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TLE; Seizure - temporal lobe

Definition

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This type of seizure arises from abnormal electrical activity in the temporal lobe on one or both sides of the brain.

Causes

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A seizure is an episode of abnormal electrical activity in the brain that can cause loss of, or reduced, consciousness; involuntary movements; and unusual sensations. When the electrical activity starts in the temporal lobe, it produces a temporal lobe seizure.

Temporal lobe seizures can affect people of any age, and can occur as a single episode or can be repeated as part of a chronic (ongoing) condition. (See seizure disorder/epilepsy).

Brain cells communicate with each other and produce our consciousness, thoughts, and actions by electrochemical processes. Certain patterns of electrical activity disrupt this normal function of the brain and spread in abnormal patterns within the brain. This process can be seen on a brainwave test, called an electroencephalograph (EEG).

Under the right conditions, such as exposure to certain drugs, high fever, or electrical stimulation, anyone can have a seizure. The temporal lobe of the brain is one area that is particularly likely to have a seizure.

Temporal lobe seizures commonly result from damage to specific areas in that part of the brain. This can be due to a head injury, infection, or damage to a portion of the temporal lobe due to lack of oxygen, brain tumors, genetic syndromes, or lesions of any sort. Many of these problems also produce brain-tissue scarring called mesial temporal sclerosis.

Because the temporal lobe is involved in consolidating memories and processing emotions, seizures in this area may begin with feelings of fear, feelings of joy (sometimes with religious associations and the sensation of a "presence"), recall of certain music, or smells and other unusual symptoms.

Symptoms

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The early warning symptoms (called an aura) of a seizure are caused by the beginning of the seizure in a small part of the temporal lobe. The aura may stop on its own, or go on to spread, producing altered awareness. The aura, also called a "simple partial seizure," can include:

- Epigastric sensations ("a funny feeling in my gut," "stomach rising")
- Hallucinations or illusions (vision, smells, tastes, or other sensory illusions)
- Sensation of deja vu, recalled emotions or memories
- Sudden, intense emotion not related to anything occurring at the time (similar to a panic attack)

If the electrical activity spreads and consciousness is altered or memory is lost, the seizure is called "complex partial." During this part of the seizure, the following may occur:

- Abnormal sensations, including:
  - Numbness, tingling, crawling sensation
  - Occurring in only one part of the body or spreading
  - Preceding motor symptoms
  - Sensory hallucinations (visual, hearing, touch, etc.)
- Autonomic (automatic) Nervous System symptoms may include:
  - Abdominal pain or discomfort
  - Dilated pupils (eyes)
  - Flushed face
  - Nausea
  - Rapid heart rate/pulse
  - Sweating
- Changes in movement, including:
  - Abnormal mouth behaviors
    - Chewing or swallowing without cause
    - Lip smacking
    - Profuse salivation ("slobbering")
  - Abnormal head movements, including:
    - Forced turning of the head
    - Forced turning of the eyes
    - Usually in the direction opposite of the location of the brain lesion
  - Repetitive movements, such as picking at clothing
  - Rhythmic muscle contraction and relaxation (rare) -- affecting one side of the body, one arm, leg, part of face, or other isolated area
- Consciousness is reduced or lost during the seizure
- Consciousness may be maintained, but memory lost (partly or completely)
- Other symptoms can include:
  - Changes in vision, speech, thought, awareness, personality
  - Loss of memory (amnesia) regarding events around the seizure (partial complex seizure)

Exams and Tests

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Temporal lobe seizures may be suspected based on the person's symptoms and the results of tests. Diagnosis may include a complete physical examination, including a detailed neuromuscular examination, which may or may not be normal.

- An EEG (electroencephalograph, recording of the brain's electrical activity) shows characteristic changes confirming partial (focal) seizures, and may show the focus (the brain area where the seizures start).
- A head CT scan or a cranial MRI may show the location and extent of the lesion (a lesion is any scar, tumor, abnormal blood vessel, etc.).
- A lumbar puncture (spinal tap) may be necessary.

Treatment

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The goals of treatment are to perform emergency measures, if necessary, and to reduce the rate of future seizures.

Emergency treatment may not be required, unless the seizure becomes generalized or movement and behavior puts the person in danger. First-aid measures should be done as appropriate, including protecting the person from injury, preventing the person from breathing vomit or mucus into their lungs, and protecting their airway or assisting them with breathing.

Important details that should be recorded and reported to the person's doctor include date and time of the seizure, how long it lasted, which body parts were involved, the type of movements or other symptoms, possible causes, and other factors that provide information about the episode (such as what happened immediately before the seizure began).

Treating certain causes may stop the seizures. This may include medical treatment of seizure disorders like epilepsy, surgical removal of tumors or brain lesions, and other treatments as needed.

Oral anticonvulsants (anti-seizure medications taken by mouth) are used to prevent or reduce the number of future seizures. How well these drugs work depends on the individual, and the medication and the dosage may have to be adjusted repeatedly.

Multiple, repeated seizures are usually treated with long-term use of an antiepileptic drug.

Follow-up includes reviewing the need for drugs at least yearly. The person may need to remain on the drugs for their entire life. Monitoring the level of medicine in the blood is important to continue control of seizures, and to reduce side effects.

Pregnancy, lack of sleep, skipping doses of medications, use of recreational drugs (including alcohol), or illness may cause seizures in a person with a previously well-controlled seizure disorder.

The person may be advised to wear or carry informational jewelry or cards (such as Medic-Alert or similar) that indicate they have a seizure disorder. These accessories may help in getting quick medical treatment if a seizure happens.

Outlook (Prognosis)

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A seizures can happen as a single, one-time event or can happen over and over with no clear reason. When seizures happen over and over with no obvious cause, it is referred to as epilepsy.

Seizures that occur once or in a single cluster are commonly caused by a recent problem such as a brain injury. They may be due to a single, isolated problem that won't happen again, but the seizures can develop into epilepsy. Seizures within the first 2 weeks of a brain injury do NOT necessarily mean that epilepsy will develop.

Serious injury can occur if a seizure happens while driving, or when operating dangerous equipment. Each state has different policies on driving restrictions. Swimming and bathing without supervision can also be dangerous, as can contact sports. Your doctor may suggest that you stop these activities if you have poorly controlled seizures.

Possible Complications

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- Breathing fluid, such as saliva, during a seizure can cause pneumonia
- Injury from falls, bumps, biting self, etc.
- Injury from a seizure occurring during driving or operating machinery
- Permanent brain damage (stroke or other damage)
- Progression to generalized (grand mal) seizures
- Prolonged seizures, seizures that happen close together (status epilepticus)
- Repeated seizures (epilepsy)
- Side effects of medications (with or without visible symptoms)

When to Contact a Medical Professional

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Go to the emergency room or call 911 if:

- Any new symptoms occur, including possible side effects of medications, such as changes in mental status (drowsiness, restlessness, confusion, sedation, or others), nausea or vomiting, rash, loss of hair, tremors or abnormal movements, problems with coordination.
- This is the first time the person has had a seizure, or this is a new type or prolonged seizure.
- This is an emergency situation.
- If seizures happen one after the other, or if the person does not regain consciousness between seizures (status epilepticus).

Prevention

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Treatment of any lesions or disorders may reduce the seizures. In many cases, epilepsy is caused by a genetic disorder and may not be preventable.

References

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