EPILEPSY AND SEIZURE DISORDERS

Abstract

Epileptic seizures are caused by a part of the brain called a seizure focus that sends out erratic and uncoordinated electrical signals and a seizure occurs in response. Epilepsy is not considered to be a curable disease. However, it is a disease that can be managed. Although epilepsy is incurable, many people who have the disease are indistinguishable from those who do not have epilepsy. In the first year after someone has been diagnosed with epilepsy, approximately half of all patients will be free of seizures using only one anti-convulsant medication and there is a good chance that the epileptic patient will become seizure free. The longer someone is free of seizures the more optimistic the outlook.

Learning Goals:

1. Identify the most common cause of seizures.
2. Identify the three stages of an epileptic seizure.
3. Identify the correct name for the signs/symptoms that immediately precede a seizure.
4. Identify signs and symptoms of a seizure.
5. Identify the three basic treatments for epilepsy.

Introduction

Epilepsy is perhaps the most well-known seizure disorder and is a disease of the brain and the nervous system. It is described as a chronic medical condition in which the patient has recurrent seizures. The underlying cause of epilepsy may be identified but in many cases the cause is unknown and is called idiopathic epilepsy. Seizure disorders are very common, and there many different types and many causes of seizure disorders. Seizures, which are also called convulsions, can be caused by drugs or alcohol and they can be caused by withdrawal from drugs or alcohol. They can also be caused by head injury (acute), as a long-term complication of traumatic brain injury, infection, pregnancy, low blood sugar or low blood calcium, fever, lack of oxygen to the brain, damage to the brain by a stroke, a brain tumor, or certain psychiatric disorders.

Statistics and Causes of Seizures

Epilepsy is common and there are many types of epilepsy that produce different signs and symptoms. One percent of the population - approximately 300,000 people - has epilepsy and in most cases the exact cause of the epilepsy is not known. There are some surgical and invasive procedures that can help if seizures are not controlled with conventional treatment. However, most people with epilepsy must take anti-seizure medications to control the disease however, although the drugs are effective, they cannot cure epilepsy.

Epileptic seizures are caused by a part of the brain called a *seizure focus* that sends out erratic and uncoordinated electrical signals and a seizure occurs in response. A seizure is defined as uncontrolled electrical activity in the brain. This can cause: 1) sudden, involuntary

movements, which may be mild and subtle or intense and violent, and are accompanied with a loss of consciousness, 2) minor physical signs, or 3) changes in consciousness, emotional state, and speech. Idiopathic epilepsy and a specific type of generalized seizure called tonic-clonic seizure or occasionally grand mal seizure will be discussed in the following sections following an initial review of the nervous system.

Structure and Organization of the Nervous System

Understanding epilepsy and seizures requires a basic familiarity with the anatomy and physiology of the nervous system. The basic anatomy of the nervous system is simple. The nervous system is divided into two parts, the *central nervous system* and the *peripheral nervous system*. The central nervous is comprised of the brain and the spinal cord, and the peripheral nervous system is comprised of the nerve fibers and nerves that are outside of the brain and spinal cords. These structures are anatomically distinct, but they are physically connected and their functions are tightly coordinated.

The brain is contained in the skull. It is a highly specialized organ that is divided into sections (*i.e.*, the cerebral cortex) and each of these sections is responsible for initiating and controlling specific activities and functions. For example, the frontal lobe of the cerebral cortex is the part of the brain that processes and retains short-term memory and the temporal lobe helps process visual and auditory input. Some parts of the brain control voluntary, conscious functions such as speech and movement, and other parts control involuntary, unconscious functions such as breath, circulation, and digestion.

The brain initiates and controls bodily activities and functions. It is an active organ that has high metabolic demands and it needs large amounts of blood, oxygen, and nutrients. The brain represents only 2.5% of total body weight but it requires about 15% of the amount of blood that is pumped from the heart each minute; and the brain cannot survive for long without an adequate supply of blood and the oxygen that is carried by the blood. As with any organ the brain also needs nutrients but the brain is unique in its need for food in two ways. First, the brain is always active. Even when a person is sleeping the brain is working hard. Second, although many of the organs and tissues of the body can use different energy sources the brain uses only glucose (more commonly known as blood sugar) for its energy and cannot use fats or protein except under very unusual circumstances.

The *spinal cord* is the next section of the nervous system. The spinal cord is a long bundle of tissue contained inside the spine that begins at the base of the brain and continues to approximately the level of what is typically called the small of the back or the beginning of the buttocks. The spinal cord has many functions, but its primary role is to act as a pathway that connects the brain with the peripheral nervous system, and connects the peripheral nervous system to the brain.

The *peripheral nervous system* is comprised of the nerve fibers that begin in the spinal cord, and the peripheral nerves. The nerve fibers are long, thin strands of nervous tissue that start at the spinal cord and travel to heart, lungs, liver, kidneys, glands, the muscles, and to every part of the body. The peripheral nervous system connects the brain to all of the organs, tissues, and muscles in the body. The

peripheral nervous system is further divided into two branches, the *autonomic nervous system* and the *somatic nervous system*.

The autonomic nervous system is essentially the nerve fibers and nerves that regulate involuntary body functions such as breathing, circulation, and digestion, functions that cannot be consciously controlled. The somatic nervous system is the part of the peripheral nervous system that connects the brain with the skeletal muscles, the muscles that used for walking, eating, *etc*., which are activities that can be consciously controlled. The nerves are the terminal part of the nervous system and the nerves connect the nervous system to all the organs and tissues of the body.

Nervous System Function

It is clear from the previous descriptions that the nervous system controls and regulates everything a person does; all conscious, voluntary activities and functions and all of unconscious, involuntary activities and functions. The brain can be considered the "command center" of the nervous system. The brain both initiates and regulates involuntary and voluntary behavior by sending out nerve impulses that are essentially messages.

The nerve impulses travel from the brain through the spinal cord and the peripheral nerve fibers and eventually they reach the peripheral nerves that are located in the organs, tissues, and muscles. At that point, depending on what part of the brain the nerve impulse came from, the organs and muscles can be stimulated, inhibited, or instructed to perform a specific activity.

It is important to remember that the peripheral nerves also send information back to the brain. In this respect, the peripheral nerves function as receptors that provide the brain vital information about the external and internal environment. Receptors for temperature, pain, and touch are prominent but the internal environment must be monitored as well. Maintaining a normal, healthy, internal environment is essential for the proper functioning and health of the peripheral nerves.

When a person changes from a sitting to standing position the blood pressure will drop because of the change in position. This can cause poor perfusion and even syncope (fainting) but there are receptors in the blood vessels that sense changes in blood pressure. These receptors send a message to the brain that the blood pressure is too low and, in response, the brain sends out nerve impulses to the arteries and veins that causes them to contract, thus maintaining a normal blood pressure. If someone is running to catch a bus, the person's muscles are working harder and faster and consequently more blood and oxygen are needed. The brain receives this data and, in response, nerve impulses are transmitted that communicate to the lungs a need to increase the rate and depth of breathing, the heart to beast faster, and the blood vessels in the legs to dilate. No conscious control is needed; all of these changes happen automatically.

Another example would be when the temperature outside is 98° and the effect on a person if he/she is sitting in direct sunlight; the person would feel much hotter. The person would begin to sweat, blood vessels dilate with the loss of body heat, and the sense of thirst stimulated. All of these physiological responses would occur because

the heat receptors send a message to the brain that the body has become too hot for optimal functioning and in response the brain initiates activities that are intended to cool a person down.

The nervous system is frequently compared to an electrical system and there are similarities. The brain is the command center that "generates" nerve impulses and the nerve impulses travel through nerve fibers that can be thought of as "electrical wires." In addition, nerve impulses are essentially electrical currents. Nerves and nerve fibers have an electrical charge, and the nerve impulses move and they affect the organs, *etc*., by a sudden and rapid change in this charge. However, there is one important difference between the nervous system and an electrical system; the nervous system is not continuous.

At certain points where nerve fibers connect with one another and at the junction of a nerve and an organ and/or muscle, there is a space called a *synapse.* When the nerve impulse reaches a synapse, the nerve impulse will stimulate the release of a chemical called a *neurotransmitter.* There are many neurotransmitters; epinephrine, called adrenalin, is probably the most commonly known. Once a neurotransmitter is released into the synapse, it moves to the adjacent part of the nerve fiber or to the organ and or muscle, binds with a receptor and by this the nerve impulse is successfully transmitted.

Tonic-Clonic Seizure

Normally, the nerve impulses that the brain and nervous system use to control and coordinate involuntary and voluntary activities are organized and purposeful. However, as already mentioned, people who

have epilepsy often have an area or areas in their brain called a seizure focus that sends out violent and uncoordinated electrical signals and, in response, the intense, erratic, and characteristic movements of a tonic-clonic seizure become evident.

The term tonic-clonic refers to the two phases of a tonic-clonic seizure. *Tonic* is a medical term that means continuous tension and *clonic* is derived from the medical term *clonus*, which means alternating muscle contractions and relaxation. A tonic-clonic seizure then is characterized by periods of intense muscle contraction and then muscle contraction-relaxation. These types of seizures are also often called grand mal seizures, a French term that is literally translated as "very bad."

The cause of idiopathic epilepsy is not known. However, researchers do know what is happening in the brain during a tonic-clonic seizure. In the normal brain (and in the brain of someone who has epilepsy, as well) there is a constant flow of nerve impulses to the organs, tissues, and muscles and these impulses both stimulate and inhibit. For example, the arteries and capillaries that control blood pressure are supplied with nerve fibers that can dilate or constrict them - the stimulatory impulses constrict the arteries and capillaries and the inhibitory impulses dilate them. Having these "opposing" nerve impulses may seem contradictory but it is not - they maintain blood pressure within a normal range and lower it or raise the blood pressure as needed.

An epileptic seizure occurs when there is an imbalance between the stimulating brain signals and the inhibiting brain signals. There is an area or areas of the brain that suddenly and unpredictably sends out stimulating signals that are extremely powerful and disorganized;

another way to view this is as an "electrical storm." The inhibiting signals are simply not strong enough to balance them out, and the body responds with an epileptic seizure. Touching a live electrical wire would convey to a person an approximate idea of what an epileptic seizure is like. The strong, sudden, and unexpected electrical current - which is very much like the strong, sudden electrical stimulus of an epileptic seizure - can knock a person down and it will certainly cause a person to move in a very erratic and uncontrolled manner.

Patients who have epilepsy may have seizures frequently or only quite rarely. Some people, after starting medications that control seizures, will be seizure-free for years. Each case is different. As mentioned earlier on, idiopathic epilepsy means that the cause of the disease is not known. However, many patients who have idiopathic epilepsy can live free of seizures and it is a disease that should not prevent someone from leading a normal life.

Signs and Symptoms of an Epileptic Seizure

A tonic-clonic, grand mal seizure is a very dramatic event and can be very frightening to observe. A tonic-clonic seizure can appear to be a continuous event, but these episodes have three parts: 1) the aura; 2) the seizure, and 3) the postictal period.

The *aura* is defined as the period of time immediately before the seizure that is accompanied by a group of signs and symptoms that are a warning or a premonition that indicates a seizure is going to occur very soon. Many people who have epilepsy have an aura, although some do not. The aura is unique for each person but it is also typically similar for each person; each person will have the same signs

and symptoms occur before the seizure and the person who has epilepsy can recognize that the aura is happening. The seizure can occur seconds after the aura or the seizure may be delayed by a period of time up to an hour. At times the aura can occur but will not be followed by a seizure.

The aura is the period immediately prior to a seizure and it is considered a warning that a seizure is going to occur. However, many people who have epilepsy also have a premonition, a "sense" that a seizure is likely and these premonitions can happen hours or days before the seizure. The signs and symptoms of an aura are often visual and auditory, but alterations in other senses and emotional and psychological aberrations can happen as well.

Signs and Symptoms of an Aura

Bright lights in the field of vision
The appearance of zig-zag lines in the field of vision
Distortion of objects in the visual field
Dizziness
Lightheaded
Blind spots
Déjà vu, the feeling that the person has been in this situation before
Spots in the field of vision
Hearing voices or sounds
Changes in smell or taste
Numbness or tingling is specific areas of the body
Anxiety
Nausea

The signs and symptoms of epilepsy can be very subtle. Sometimes the person will simply become very quiet and stare blankly, and appear as if they are thinking very deeply. The person may begin to tremble and lose coordination. Although it can be helpful to know the general signs and symptoms of typical auras, it should be remembered that the aura is different for every person.

Following the aura, the tonic-clonic seizure will begin and witnessing a tonic-clonic seizure is dramatic and unforgettable. The patient will have short periods of intense muscle contraction (tonic) alternating with short periods of muscle contraction-relaxation (clonic) during which the arms, legs, or other parts of the body will be observed to be moving uncontrollably. The person is unconscious and may be thrashing around violently. The back will be arched and the arms and legs will move back and forth, rapidly and out of control; and, this is the clonic period. If the patient is standing, the patient will lose balance and fall.

The patient will be unconscious during a tonic-clonic seizure, and may be incontinent of stool or urine. Most seizures are brief and end spontaneously.

Tonic-clonic seizures do not last long. Most tonic-clonic seizures will resolve without treatment in 30-60 seconds or a few minutes at most and once the seizure has ended the patient enters the third stage of a seizure episode, the *postictal period*. The postictal period is the recovery phase that begins immediately after the tonic-clonic seizure has ended and lasts until the patient is fully awake and has returned to a pre-seizure level of consciousness and behavior. The postictal phase may last from several minutes to several hours.

Many people during the postictal period sleep very deeply and cannot be aroused. When the patient does wake up he/she may be confused and disoriented and will not remember the events of the seizure. Complaints of headache, nausea, and fatigue during the postictal

period are common, and many patients will have feelings of anxiety, fear, or depression and have difficulty speaking.

Some people have tonic-clonic seizures that appear to occur at random, with no connection to time of day, environmental influences, or the patient's emotional state. However, other people say that they have tonic-clonic seizure "triggers," which are specific events or emotional conditions that seem to precipitate a seizure. Some of the commonly reported seizure triggers are listed below.

Commonly Reported Seizure Triggers

Alcohol or drug use
Caffeine
Certain medications
Fever
Flashing lights
Lack of sleep
Low blood sugar
Menstrual cycle
Physical stress
Psychological stress
Specific foods

Epileptic Seizure Risk Factors

For the most part, a single epileptic seizure in and of itself is not highly dangerous. There is some evidence that people with epilepsy have a shortened life expectancy. There is also some evidence that people with epilepsy have a higher risk of sudden death, death that is not related to a seizure.

Although the seizure itself is not particularly dangerous, a seizure causes a sudden, unpredictable loss of consciousness and violent, uncontrollable muscle contractions and movements and the physical

safety of the patient is at risk. The patient is unconscious and thrashing around violently. It is not unusual for someone to fall and strike the head, break bones, and become bruised and cut during a seizure event. In addition, although some people have recognizable seizure triggers and have a seizure aura, some people have neither and may have a seizure that could be life-threatening.

Someone who has epilepsy can be allowed to drive a vehicle. The laws regarding driving and epilepsy differ in each state but there is an initial period after the diagnosis of epilepsy has been made during which driving is not allowed. Driving is allowed after a physician has determined that the person who has epilepsy has been seizure free and notified the Department of Motor Vehicles of this, but the required period of time defined as seizure free varies; it can be six months or as long as two years. In addition, the responsibility for reporting someone's epilepsy to the Department of Motor Vehicles also differs from state to state. Although in some states a physician is the person who is responsible for reporting cases of epilepsy to the Department of Motor Vehicles, the physician is not the person who decides driving issues.

Aside from the physical safety of the patient, the other significant risk associated with a tonic-clonic seizure is the lack of oxygen. During a tonic-clonic seizure, the rapid, intense muscular contractions and the intense muscular tension prevent the chest from expanding and contracting, and the person having a tonic-clonic seizure essentially stops breathing. For young, healthy individuals, this can be tolerated but for older people or people who have cardiac or respiratory problems, the lack of oxygen can be dangerous.

Many people with idiopathic epilepsy have single seizures. However, some people with idiopathic epilepsy have a condition called *status epilepticus*. In status epilepticus, there are multiple tonic-clonic seizures, one after another. At times, someone with status epilepticus can have periods of seizure activity that can last for many hours. This is very dangerous and requires aggressive treatment.

Treatments for Epilepsy

Idiopathic epilepsy must be treated. It is not a condition that will resolve and having recurrent seizures is dangerous. After the medical work-up has been completed and the diagnosis has been made, idiopathic epilepsy is treated using medications, surgery, different types of brain stimulation techniques and for some patients, a special diet. Medications are the cornerstone of treating idiopathic epilepsy and these will be discussed first. The other treatment options will be briefly covered at the end of this section. Some of the drugs that are commonly used to treat epilepsy and their common side effects are listed below. The generic name is followed by the trade name in parentheses.

Commonly Used Anticonvulsant Drugs

- **Phenytoin (Dilantin): Ataxia, drowsiness, and oral rashes, especially of the gums**
- **Valproic acid (Depakote): Dizziness, tremor, weight gain**
- **Carbamazapine (Tegretol): Ataxia, drowsiness, dizziness, nausea, and vomiting.**
- **Levetiracetam (Keppra): Agitation, anxiety, drowsiness, and headache**
- **Lamotrigine (Lamictal): Blurred vision, dizziness, and nausea.**
- **Gabapentin (Neurontin)" Ataxia, dizziness, drowsiness**
- **Topirimate (Topamax): Dizziness, drowsiness, numbness/tingling of the extremities**

- **Oxcarbazepine (Trileptal): Ataxia, dizziness, drowsiness, headache**

Anticonvulsant drugs are oral medications, although some are available in the intravenous (IV) form, and most are taken by mouth two or three times a day. As with any medication it can take time to find the proper dose or the proper medication, but many people have success with the first anticonvulsant medication they are prescribed.

There are several more anticonvulsant drugs that can be used aside from the ones listed above, and at times a patient will need two or even three drugs to control seizures. Some of these medications such as phenytoin, carbamazepine, and valproic acid are adjusted by periodically checking the level of the drug in the blood. The general rule when prescribing anticonvulsant drugs is for medical clinicians to start at a low dose and gradually increase the dose as needed - *start low, go slow*. The choice of which drug to a clinician may prescribe will depend on cost to the patient, as well as drug tolerability and side effects.

Side effects for most of the anticonvulsants are loss of full control of body movements (ataxia), dizziness, drowsiness, and these will occur in approximately 30%-40% of patients taking these drugs. These side effects can be very unpleasant and many people will need to be on anticonvulsant therapy for a long time, if not forever. Once good control of the seizures has been achieved and someone has not had a seizure for months or years, it can be very tempting to skip doses or

even stop taking the anticonvulsants, and poor compliance with an anti-convulsant medication regimen is a serious problem.

It has been estimated that up to 50% of all people who have epilepsy do not take their anti-convulsant medication as directed. Failing to comply with the medication regimen increases the risk of seizures, hospitalization, and injury. One of the most common causes of seizures in a patient who has epilepsy is non-compliance with the medication therapy.

Approximately 25%-30% of all people with idiopathic epilepsy will not respond to medications. If multiple anti-convulsants have been tried without success the next step is to determine how bad the epilepsy is. If the patient is having very occasional seizures - a condition commonly called breakthrough seizures - then it may be preferable to simply maintain the current medication regimen and make lifestyle adjustments so that the patient's safety is ensured. However, if the seizures are happening very frequently, cause injury, or prevent someone from working and maintaining normal social relationships then either surgery or nerve stimulation should be considered.

Epilepsy surgery involves identifying the seizure focus and surgically removing it. This is obviously a procedure that cannot be reversed and careful targeting and removal of the area is critical so that other areas of the brain are not affected. *Nerve stimulation* for the treatment of epilepsy is quite similar to implantation of a cardiac pacemaker. A pulse generator is placed in a small pocket of fat beneath the skin, and a wire from the pulse generator is inserted into a specific area of the brain. The pulse generator sends electrical impulse to the brain and

"overrides" the area of the brain that causes seizures. This procedure has the advantage of being reversible (the wire and pulse generator can be removed at any time). It can be used if epilepsy surgery has failed, and many patients have a significant reduction in the number of seizures they experience.

For a few people - mostly children - a special diet called the *ketogenic diet* may be very helpful. This diet contains a lot of fat and very few carbohydrates (*i.e*., breads, starches, *etc*). When fats are digested, one of the breakdown products is ketones. No one is sure why but when someone with epilepsy uses ketones for energy, the incidence of seizures can be dramatically reduced.

Prognosis for a Patient with Epilepsy

Epilepsy is not considered to be a curable disease, only a disease that can be managed. When thought of in this way the outlook for a patient who has epilepsy would seem to be very discouraging. Yet, while epilepsy is incurable, many people who have the disease are indistinguishable from those who do not and epilepsy can be controlled and managed. The following information is from the Epilepsy Foundation (www.epilepsy.com) and it provides a realistic assessment of what patients who have epilepsy can expect.

In the first year after someone has been diagnosed with epilepsy approximately half of all patients will be free of seizures using only one anti-convulsant medication. If someone responds to just one anticonvulsant there is a good chance that he/she will become seizure free. Approximately 70% of all people who have epilepsy will have what is considered to be good control of their seizures. Many patients -

approximately 50% - report that they have side effects from their anticonvulsant medications.

The longer someone is free of seizures the more optimistic the outlook. If someone who has epilepsy has not a had a seizure for 2-5 years then it may be possible to stop anti-convulsant therapy after the risks and benefits of doing so have been assessed. If a patient develops epilepsy during childhood, then there is a very good chance that he/she will be seizure free later in life.

Emergency Treatment for a Tonic-Clonic Seizure

Most people with idiopathic epilepsy live a normal life, but for many individuals there is always a possibility of a tonic-clonic seizure. The healthcare professional is responsible for patient safety and needs to know what to do if or when someone has a tonic-clonic seizure.

There are few situations that cause as much excitement and provoke as much anxiety as a tonic-clonic seizure. It is a very frightening event to witness, even if such an event has been seen before. However, there are two points the health professional can remember that will help to stay calm and focused when someone is having a tonic-clonic seizure: 1) A tonic-clonic seizure is not dangerous, if managed correctly, and 2) it can be managed, and there are basic steps to follow (discussed later on).

A tonic-clonic seizure can have serious consequences however there are some practical steps that can be followed during a patient's tonic-clonic seizure. If someone is having a tonic-clonic seizure the two important points to remember are to: Firstly, stay calm and stay with

the patient. Staying calm can be especially difficult to do if there are non-medical people witnessing the seizure, and they will almost certainly become excited and can add to the confusion. The simplest way to remain calm and focused is to remember that for the great majority of people, the seizure will only last a minute or so and the patient will not be harmed. Secondly, stay with the patient unless there is some very important reason to leave the patient in order to improve the safety of the situation. Occasionally, if the seizure is prolonged or if the patient has more than one, the medical clinician may order an intravenous benzodiazepine medication, such as Ativan. Benzodiazepine medication are generally successful in stopping seizures. The following flow chart can be referred to so that if a tonic-clonic seizure occurs there will be a plan of action in place.

Remain calm
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Check a watch or a clock and note the time.
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Call for help but DO NOT leave the patient.
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Do NOT insert anything into the patient's mouth. The patient is not in danger of swallowing the tongue.
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Do NOT give the patient anything to eat or drink during the seizure or during the postictal period.
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Do NOT restrain the patient. It is impossible to do, it does not serve any useful purpose, and it may cause injury to the patient or the person helping the patient.
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Make sure the environment is safe. Remove any objects nearby that the patient may hit during the seizure. If need be, move the patient to an area that is safe.

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Protect the patient's head. This can be done by placing a pillow, folded blanket, *etc*., under the head.

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During the postictal period, the patient may be confused and disoriented, and should not be left alone until full consciousness and orientation to time, place, and person have been regained.

Summary

Tonic-clonic seizures happen when a specific area of the brain called a seizure focus sends out intense, uncoordinated impulse to the skeletal muscles. A tonic-clonic seizure is characterized by intense muscle contractions alternating with rapid muscle contraction/relaxation. Although the seizure focus can be identified and the pathophysiology of tonic-clonic seizures is well understood, the cause, or causes of idiopathic epilepsy are not known.

Epileptic seizures can be treated with medications, surgery, or nerve stimulation, but anticonvulsant drug therapy is the most commonly used of these three. Many patients can be successfully treated with one or two anticonvulsant drugs and if the patient is seizure free for some period of time it may be possible to discontinue drug treatment. If the patient does not respond to drug therapy or if the seizures are severely impacting safety and quality of life, surgery or nerve stimulation can be used.

A tonic-clonic seizure is dramatic and frightening but if the situation is handled properly they seldom cause harm to the patient. When witnessing a tonic-clonic seizure, it is important to stay calm, note the time of onset and duration of the seizure, and to stay with the patient

and call for help. The environment around the patient should be monitored for safety and there should be no attempt to restrain the patient or insert anything in the patient's mouth. Those assisting a patient during a seizure event should protect the patient's head, and stay with the patient during the postictal period until full consciousness and orientation to time, place, and person have returned.