What happens during a seizure? [1]

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A seizure is compared to an "electrical storm" in your brain.

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Imagine that you are doing something routine, like walking back to the dining table after getting a glass of water from the fridge. Now imagine that a strange feeling overcomes you and you feel as if something bad is about to happen. Suddenly you feel a strange stomach pain that creeps along with a dizziness that stops you in your tracks. No matter how much you want and try to keep moving and back to your chair, you can’t, and everything goes dark, as if you were falling into deep sleep.

Upon awakening, you begin to make out three shadows: three people who have run to your rescue after watching you fall to the ground so abruptly. A dull pain overtakes your arms, legs, back, and extreme fatigue overwhelms you. This is how Miguel described his experience the first

time that he suffered a seizure.

Seizures are a transient symptom associated with what some scientists have described as "electrical storms" in our brain. The brain controls things like our body temperature, the heart rate, our thoughts, what we understand, our emotions, and even the scents and colors that we sense daily. All this information comes to us and is processed in the form of electrical impulses that run throughout our body by means of the cells of our nervous system: neurons.

In order to be healthy, all of these cells must be functioning and communicating properly. But when these communications are severed in any way, we may suffer from diseases such as epilepsy which can lead to seizures like the one Miguel experienced and is described above.

Using Miguel's experience as an example, we can describe the phases of a seizure:

- The first phase is known as the *prodrome*. It can occur hours or even days before the actual seizure. This phase is not considered a part of the actual seizure and does not necessarily occur in all cases. However, the prodrome phase could serve as a warning sign of an oncoming seizure and may provide a person with the necessary time to take a medication that may help prevent the episode.

- The next phase is the *aura*. It is considered the first symptom of a seizure and is often an indescribable feeling which is generally the same in every episode for a single person. Some of the changes that could be felt during this phase include: strange smells, tastes, or sounds, blurred vision, fear or panic, dizziness, headache, nausea, and/or loss of sensation in any part of the body.

- The next phase is the called *ictal*. This phase lasts from the onset of the aura until the physical symptoms subside. It is during this period of time that uncontrolled electrical activity can be measured in the brain. This dysregulation can cause symptoms that may range in severity from confusion, distraction, daydreaming, seeing lights or white spots, hallucinations, loss of consciousness or motor skills, excessive sweating, and even tremors. These symptoms can be observed in a variety of combinations and are not necessarily all present. Some seizures may only present one of the abovementioned symptoms.

- Finally, the *postictal state* occurs after the resolution of symptoms.

The type of seizure characteristic of epilepsy involves a classic progression of symptoms: first the loss of consciousness, followed by a period of generalized muscle rigidity, and finally a series of rapid and constant movements. This progression of symptoms is termed a *tonic-clonic seizure*.

Many people feel extremely exhausted after a seizure, this is mainly attributed to involuntary muscle contractions that may have been suffered during the event. It is also common that the person does not recall the seizure and suffer some memory loss. However, this was not the case

of Miguel who was able to retell his experience in quite some detail.

Much remains to be discovered about our brain and its associated conditions like epilepsy. Scientists are currently hard at work in developing new drugs and therapies that may manage and minimize the occurrence of these symptoms.

Once epilepsy is diagnosed, it is important to begin treatment promptly. While epilepsy cannot be cured, modern medications and surgical techniques can provide adequate control of seizures for about 70% of people with this condition.

Some drugs may be more effective for specific types of seizures. Also, some children may use special diets to help control their condition when the right combination of medications cannot be found or may cause serious side effects.

Most seizures resolve without causing brain damage. But ongoing uncontrolled seizures may be harmful to the nervous system. It is important to be aware that many people with this condition may also develop behavioral and emotional problems. These may be the result of the stigma attached to being an epilepsy patient.

Children living with this condition are especially susceptible to embarrassment, frustration, bullying or teasing, or tend to avoid their peers in school and other social environments. Epilepsy may also prove to be very restricting to a person's independence since they cannot safely perform regular tasks such as cooking, driving, or swimming without taking additional precautions.

In order to improve the quality of life of people that have been diagnosed with epilepsy, scientists are studying the underlying causes of this condition in people of all ages. They are also studying the physical damage that could result as a consequence of a seizure e.g. trauma, stroke, and brain tumors.

Research has also been directed towards identifying genes and their role in seizures. This information may allow doctors to prevent the development of epilepsy. Also, it could predict more accurately which treatments will be most beneficial to individuals with specific types of epilepsy.

If you or someone you know has experienced something similar to what is described in this article, or have lost consciousness for any reason, it is important to visit your doctor. He/she will be able to give you the proper orientation regarding what can be done to alleviate these symptoms.

In addition, for those who have already been diagnosed with epilepsy or anyone who wants to learn more about this topic, you can contact support groups such as the Puerto Rican Epilepsy Society [3]. They can provide excellent educational resources and support for people who live with this condition.

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