

## Anatomy

# Photosensitive epilepsy

Photosensitive epilepsy is a type of epilepsy in which seizures are triggered by flashing lights or other visual stimuli. These seizures can range in severity from brief periods of dizziness or disorientation to more severe tonic-clonic seizures, which involve muscle spasms and loss of consciousness. Photosensitive epilepsy is relatively uncommon, accounting for about 3% of all cases of epilepsy. However, the actual prevalence may be somewhat higher, as some people with photosensitive epilepsy may not be aware that their seizures are triggered by visual stimuli.

Strobe lights, also known as flashing lights, can potentially induce seizures in people with photosensitive epilepsy. The frequency of the flashing can play a role in the likelihood of a seizure being triggered. Generally, flashing lights with a frequency of around 20 flashes per second or higher have a greater potential to trigger seizures in people with photosensitive epilepsy.

However, it is important to note that the threshold for seizure induction can vary greatly from person to person. Some people may be more sensitive to flashing lights than others, and the likelihood of a seizure being triggered can also depend on other factors such as the intensity and duration of the flashing lights.

It is important for people with photosensitive epilepsy to be aware of their condition and to take precautions to avoid exposure to flashing lights or other stimuli that may trigger seizures.

It is also important to be mindful of others who may be sensitive to flashing lights and to avoid using strobe lights or other flashing stimuli in public settings or in the presence of individuals with epilepsy.

## Mechanism

The exact mechanism behind the induction of seizures by flashing lights is not fully understood, but it is thought to involve changes in brain activity that are triggered by the flashing stimuli. In people with photosensitive epilepsy, the visual system is particularly sensitive to certain patterns of light, such as flashing or flickering lights. When the brain is exposed to these stimuli, it can lead to changes in brain activity and the development of a seizure.

There is evidence to suggest that the stimulation of specific cells in the retina, called ganglion cells, may play a role in the induction of seizures by flashing lights. These cells are responsible for transmitting visual information from the retina to the brain, and it is thought that their activation by flashing lights may lead to abnormal brain activity and the development of a seizure.

It is also possible that the induction of seizures by flashing lights may involve changes in the release of neurotransmitters, such as dopamine, in the brain. Neurotransmitters are chemicals that transmit signals between nerve cells, and changes in their levels or activity can alter brain function. Further research is needed to fully understand the mechanisms behind the induction of seizures by flashing lights and other visual stimuli in people with photosensitive epilepsy.

## Famous Cases

There have been several notable cases of photosensitive epilepsy that have garnered media attention over the years. Here are a few examples:

- In 1997, an episode of the animated TV series “Pokemon” triggered a rash of seizures in Japanese children. The episode, which featured rapidly flashing lights, was later banned in Japan.
- In 2010, the website of the UK's Conservative Party was redesigned with a flashing “ticker” that was found to be capable of triggering seizures in some visitors. The website was subsequently redesigned to remove the flashing element.
- In 2013, a widely circulated video of a Ford Mustang revving its engine at a car show was found to contain flashing lights that could potentially trigger seizures in photosensitive individuals.
- In 2018, an online game called “Fortnite” was criticized for containing flashing lights that could potentially trigger seizures. The developers of the game later released an update that gave players the option to turn off flashing lights.

These are just a few examples, and it is important to note that photosensitive epilepsy is still relatively rare. However, it is important to be aware of the potential risks and to take appropriate precautions, especially when it comes to media content that may contain flashing lights or patterns.

## Law

In the United States, the Federal Communications Commission (FCC) has regulations in place that aim to reduce the risk of seizures and other health problems related to the use of flashing or strobe lights in television programming and other media. These regulations are designed to protect the public, particularly children and people with photosensitive epilepsy.

According to the FCC's regulations, television programs and commercials that contain flashing lights or patterns must be labeled with a warning advising viewers to exercise caution. The warning must be displayed at the beginning of the program or commercial and must remain on the screen for a sufficient period of time to be noticed by viewers.

The FCC's regulations also require broadcasters to take steps to minimize the risk of seizures by limiting the use of flashing lights and patterns, using a safe level of brightness, and avoiding certain colors and patterns that are known to be more likely to trigger seizures.

It is worth noting that the specific requirements and regulations related to flashing and strobe lights may vary by country. It is always a good idea to check with your local regulatory agency to learn more about the specific rules and guidelines that apply in your region.

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