



BRAIN INJURY ASSOCIATION OF NEW JERSEY

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No Brain Injury is
Too Mild to Ignore,
or Too Severe to
Lose Hope

Epilepsy as a Consequence of Brain Injury

By Carolyn Rocchio

Epilepsy is far more common than most people believe. As many as two and a half million Americans are affected by epilepsy. The name epilepsy is derived from a Greek word, meaning “to possess, seize or hold,” and there are different forms of epilepsy other than those more commonly recognized by the general public, such as grand mal or petit mal (convulsive seizures).

Generally a person is not born with epilepsy but develops this neurologic disorder as a consequence of another condition such as a blow to the head, resulting in a brain injury, a brain infection or tumor, high fever, an allergic reaction to a drug or a severe medical condition such as stroke, kidney or liver failure. Most epilepsy is treatable and can be controlled with medication.

The central nervous system is a very complex “computer”, packed with neurons, a type of nerve cell in the brain. A seizure occurs when a large group of neurons misfire or short circuit, temporarily. In traumatic brain injury misfires can occur as a result of damage in the brain which interrupts the normal flow of cell firings. For some persons with epilepsy, seizures can be triggered by insufficient sleep, not eating right, and even stress.

Types of Epilepsy

Within the brain there is a network of cells, neurons that communicate with one another by sending small electrical charges much like information sent from one point to another over telephone lines. When a seizure occurs, it means that neurons either fired when they shouldn't or didn't fire when they should. Seizures are divided into two categories, generalized, an uncontrolled electrical discharge affecting several parts of both sides of the brain and focal seizures, when the electrical discharges affects only an isolated part of the brain. It is often difficult for doctors to diagnose which of the 20 kinds of epilepsy a patient is experiencing without clinical evaluations and sophisticated testing.

Generalized-onset seizures are the most common. Neurons discharge in one area of the brain and then spread throughout the brain causing, twitching, rigidity, convulsions, salivation, and other symptoms which may result in a brief loss of consciousness. Under the category of generalized-onset seizure is Tonic-clonic, which is more commonly called grand mal, the seizure is tonic if the body stiffens, and clonic if it jerks; however, it can also be tonic-clonic if the body stiffens and then jerks. Observation is very important to proper diagnosis.



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In petit mal (also called absence seizures), another form of generalized onset seizures, the part of the brain that maintains awareness briefly lapses. It may cause a short term loss of muscle control or repetitive motions such as chewing. It can be best described as appearing “spaced out.” People, experiencing petit mal seizures are often accused of not paying attention.

Myoclonic seizures affect the motor cortex of the brain and are frequently seen in youngsters when observed while sleeping. They may have slight involuntary movements or jerking of the arms or legs. Atonic seizures occur with total loss of muscle tone and the individual would be expected to fall to the floor. Status epilepticus occurs when a seizure or a series of several closely spaced seizures lasts 30 minutes or longer. It then becomes a medical emergency.

Partial Seizures

Partial seizures are a very common consequence after traumatic brain injury and often appear some months or years after the insult to the brain. They take several forms but are generally less severe than generalized seizures. Partial seizures occur when an abnormal electrical discharge affects a small area of the brain (the focus area) and does not spread to other parts of the brain. When this discharge occurs without a change in consciousness it can be called a simple partial seizure, a Jacksonian, or focal seizure. When experiencing a simple partial seizure the individual may complain of smelling foul odors, seeing flashing lights, feeling tingly, and/or hearing voices.

A complex partial seizure, also called psychomotor or temporal lobe seizures, will cause an individual to have a change in the level of consciousness, but with no loss of consciousness. The individual may lose touch with the environment, hear things, behave strangely, grate teeth, fidget with an object, and/or move around randomly in a restless manner. Afterwards there is usually a period of confusion and often an inability to carry a conversation about the episode.

Diagnosing Epilepsy

The most commonly used diagnostic tool for determining epilepsy is the electroencephalograph (EEG). This test causes no discomfort. While the individual reclines comfortably, a technician attaches small sensors, called electrodes, to various areas of the individual’s scalp with a paste like substance which is washed off after completing the test. The EEG measures electrical activity in the brain. The sensors record activity in different areas of the brain and when abnormal activity is discovered it helps determine what kind of seizures are occurring.



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Waking EEG testing does not always pick up abnormalities in the brain waves because the electric currents are very small and may not misfire during a short testing period. For that reason, when seizure activity is suspected, the doctor may order a 24 hour continuous EEG. This test can be done in a hospital or at home with little inconvenience to the patient and it provides more conclusive evidence over the extended period of time.

The doctor may order other neurologic tests before arriving at a diagnosis of epilepsy but EEG testing is the most commonly used test.

Controlling Epilepsy

Most epilepsy can be controlled with anticonvulsant medication and good health habits. As is the case with any pharmacological preparation, all anticonvulsants have side effects. It is important for the individual and the doctor to determine which anticonvulsant preparation is best for the type of seizures being treated.

Persons using anticonvulsants must use caution in the use of alcohol, other medicines, such as antibiotics and birth control pills. Your doctor should always be informed about any other drugs or medication being used, even over the counter headache, cough and cold preparations. It is important to be aware of your state's laws governing issuance of driving licenses for persons diagnosed with seizure disorders.

For further information about epilepsy, assistance with medication, access to support groups in your area, and referral to appropriate physicians, contact the Epilepsy Foundation of America, 4351 Garden City Drive, Landover, MD 20785, telephone 1-800-332-1000.

References

Moshe, S., Pellock, J.M., & Salon, M.C. (1993). *The Parke-Davis Manual on Epilepsy: Useful Tips That Help You Get the Best Out of Life*. New York: The KSF Group.

Carolyn Rocchio is the parent of a son with a brain injury sustained in a 1982 automobile crash. She is the founder of the Brain Injury Association of Florida and a former Board member of the Brain Injury Association.

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*Additional information can be found at: Helpline: 1.800.444.6443
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