

Seizures - Convulsions

By Lita Lee, Ph.D.
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The two most common types of seizures that I have observed in my practice appear related to the use of NutraSweet (aspartame) and similar substances, and estrogen dominance. Other factors such as fluoride, excess unsaturated acids, and nutrient excesses and deficiencies are also involved. According to Dr. Peat, natural progesterone will stop a seizure, regardless of its cause. Following is a list of causal factors in seizures. Finally, there is a structural problem, described below, that can cause seizures.

NutraSweet (Aspartame) And Related Substances

Substances containing aspartate, such as Aspartame (NutraSweet), and substances containing glutamates, including MSG (monosodium glutamate) and minerals chelated with aspartate or glutamate, can freely enter the brain and cause toxic effects, including seizures in sensitive people. The amount of these substances required to cause a seizure is not dose-related --that is, a small amount can trigger a seizure in some while others may not be affected by ingesting excessive amounts. Aspartic acid and glutamic acid are among the excitatory amino acids, which must be naturally balanced with the inhibitory, or calming, amino acids such as alanine, glycine, taurine, and GABA. When these amino acids are released slowly by the digestion of whole-food proteins, no brain flooding of excitatory amino acids occurs--it's only when they're consumed in isolated or concentrated forms that problems occur.

Aspartate (aspartic acid) and glutamate (glutamic acid) have similar chemical structures. They show comparable toxicity in animal studies, and their effects appear to be additive. John Olney, Professor of Neuropathology at Washington University School of Medicine, has done much research on the toxicity of excess aspartic and glutamic acids. He has concluded that excess glutamate and aspartate can flood the excitatory receptors on the external surface of nerve cells and excite nerve cells to death.

The powerful convulsant effects of aspartates and glutamates have been observed in numerous animal studies. Other contributing factors may lower the threshold to seizures in aspartame reactors:

Exaggerated low blood sugar caused by consumption of diet drinks.

- Depletion of norepinephrine in aspartame-induced insomnia, which provokes seizures in animal studies.
- Excess fluid consumption resulting from the intense thirst induced by aspartame.
- The ingestion of methanol, which causes decreased cerebral blood flow and oxygen consumption, brain edema, and altered brain electrolytes (sodium and potassium). Methanol intoxication survivors develop Parkinson's disease, dementia, and other neurologic problems.
- Excess phenylalanine, which handicaps the nutritional flow of other amino acids to the brain and can lead to a decreased seizure threshold in certain individuals.

Seizures occur in up to 15 percent of people sensitive to aspartame. Most of these suffered their first convulsion after consuming one or more diet products. No other underlying cause could be found in most of these patients, despite extensive tests such as CAT scans, MRIs, EEGs, and even angiograms of the cerebral blood vessels. Epileptic patients with previously controlled seizures developed recurrent attacks despite anti-epileptic drug treatment. Half of those with grand mal seizures experienced severe headaches including migraines prior to the convulsion. Aspartame-caused seizures disappear or dramatically decrease when aspartame is avoided, even without anti-epileptic drugs.

A single dose of aspartame can trigger a seizure in susceptible patients. Consider the following gruesome examples: a nursing infant convulsed when his mother drank a single diet soda. A woman with epilepsy convulsed within minutes after chewing a single piece of sugar-free gum sweetened with aspartame. A 16-year-old female having previously unexplained seizures experienced a seizure in a clinical experiment after one serving of chocolate pudding sweetened with aspartame. A 31-year-old nurse had a grand mal seizure within hours after drinking two liters of an aspartame-sweetened drink. There are many more cases.

Children who have unexplained seizures should be questioned regarding their ingestion of NutraSweet and related substances, such as MSG. This is very important because it can reduce or eliminate the need for drugs. If you are a health-conscious person, you probably wouldn't even think of buying products containing aspartame. However, you may not be aware of the danger of vitamin and mineral supplements from health food stores that may contain aspartate or glutamate as chelating agents mentioned above. This includes any mineral chelate, such as calcium glutamate or aspartate and so on. In addition many people who avoid NutraSweet take large doses of single amino acids including glutamine and others in the mistaken beliefs that isolated amino acids are good for them.

“Seizures can be caused by lack of glucose, lack of oxygen, vitamin B6 deficiency and magnesium deficiency. They are more likely to occur during the night, during puberty, premenstrually, during pregnancy, during the first year of life, and can be triggered by hyperventilation, running, strong emotions, or unusual sensory stimulation. Water retention and low sodium increase susceptibility to seizures. All recognized anti-seizure drugs are teratogenic, and women who are taking such drugs are told that pregnancy might kill them if they stop the drug, but that their babies will have a greatly increased risk of birth defects if they take the drugs during pregnancy. This is why a better understanding of epilepsy is very important.” (Peat, Ray, Ph.D., Ray Peat's Newsletter, July 1997)

Cyclic Seizures Due To Estrogen Toxicity

All forms of estrogen are toxic, whether in normal amounts unbalanced by progesterone, or in excess amounts with normal levels of progesterone--that is, in a ratio of less than 10 times progesterone to one part estrogen. Women with a sluggish thyroid and/or estrogen dominance, or with estrogen unopposed by progesterone, are more prone to estrogen toxicity conditions such as cyclic seizures, migraines, hypoglycemia (low blood sugar), and fluid retention. Because unopposed estrogen is epileptogenic, women in this category are much more likely to be vulnerable to aspartame-related migraines and seizures. In addition to estrogen, all estrogenic substances, including herbs such as sage and black cohosh and estrogen mimics, such as pesticides can predispose one to seizures or worsen seizures in those who have them.

In one study, seizures were electrically induced to measure the effects of anti-seizure drugs. The researchers found that both estrogen and cortisol lower the threshold for both chemically induced seizures--that is, those that are produced by certain substances such as aspartic acid, glutamic acid, aspartame, and monosodium glutamate--or electrically induced seizures, caused by electroshock treatment. Estrogen and cortisol cause cells to become excited. If these cells are then exposed to chemicals that induce seizures, the resulting excitation can cause cell death.

According to Peat, natural progesterone will stop all seizures regardless of their cause, but this probably does not include structural causes. Natural progesterone opposes the toxic effects of estrogen and acts to quiet the cells. In large doses, natural progesterone has anesthetic properties. Here are some examples of how natural progesterone controls seizures from different causes.

A 52-year-old woman with abnormally low progesterone but normal estrogen developed cyclic seizures so severe that she was severely disabled both mentally and physically, and required constant care. Peat treated her with progesterone. Within four days, she was able to bend her arthritic fingers, walk, smile, and remember who she was.

A one-month-old infant presented with 100 seizures per day. His birth was traumatic. Born breech, he was delivered rapidly. His parents chose to try low-dose ultrasound on the back of his neck. There was no improvement after one month of treatment. A San Francisco physician administered homeopathics to no avail. Then small doses of Peat's 10 percent natural progesterone in a base of natural vitamin E was administered topically on the infant's belly daily. Cranial-sacral therapy treatments were performed weekly. Arnica cream was rubbed on the back of the baby's neck and a homeopathic formula called Rescue Remedy was given orally and added to the baby's bath water. After one week, seizures decreased from 100 to 12 daily. After the second week, the child had three to four seizures daily. After the third week, there were no more seizures. The baby was observed to be increasingly alert and conscious of his surroundings.

The Water and Low Sodium - Seizure Connection

Water retention is so clearly related to seizures that excessive consumption of water was used as a diagnostic procedure. Water intoxication (excessive consumption of water beyond two quarts) increases susceptibility to seizures even in individuals not prone to them. Low blood sodium (hyponatremia) also predisposes one to seizures. So, a person with low blood sodium is more susceptible to seizures if excessive water is consumed. Since hypothyroid people can't retain sodium and, unopposed estrogen increases edema (water retention), low thyroid, high estrogen people (especially women) have two known conditions which predispose to seizures: edema (water retention) and hyponatremia. (Peat, Ray, Ph.D., *Ray Peat's Newsletter*, July 1997)

Fluoride Toxicity

Fluoride poisons at least 30 enzymes. It can cause osteoporosis, bone cancer, aging, and many other problems, but here we will describe its epileptogenic effects. As with aspartame, the toxic effects of fluoride are not dose-related and, in fact, have been observed at levels below level commonly found in most fluoridated city water supplies.

A disturbance of either calcium or magnesium levels in the blood can produce seizures. One cause of such a disturbance is fluoride. Fluoride decreases calcium by combining with it to form an insoluble compound called calcium fluoride. This has been used as an antidote for acute

fluoride poisoning. Suppose you don't have acute poisoning but simply consume continuous small dosages in your water supply? The parathyroid glands are extremely sensitive to fluoride. Continuous doses cause hyperparathyroidism, which further decreases calcium and upsets its delicate balance, and can result in seizures.

To illustrate the above: A 12-year-old boy who lived in a town where the water supply was fluoridated developed seizures of increasing severity. The boy remained totally conscious during the seizures, a feature not usually observed in epilepsy. A neurosurgeon performed many tests, as well as exploratory brain surgery, but found no reasons for the seizures. When fluoridated water was eliminated from his diet, the child had no further attacks. This story is not uncommon. Many people who developed fluoride-toxicity symptoms while living in cities with fluoridated water became symptom-free when they move to cities without fluoridated water.

Blood Sugar Problems

I have had many clients with seizure disorders resulting from both sugar intolerance and hypothyroidism leading to low blood sugar and brain starvation of glucose. Glucose deficiency may be a universal cause of seizures. Such attacks occur more frequently at night, often during sleep, when adrenalin rises and causes a surge of cortisol -- the body's effort to raise blood sugar.

This can be relieved with disaccharidase enzyme support, especially Thera-zymes PAN and Adr, thyroid glandular and dietary changes. Dietary ways of maintaining blood sugar at night include eating a salty snack, drinking fruit juice with some sea salt or eating a light protein snack just before bed. Stevia, an herbal sweetener, is also excellent for stabilizing blood sugar.

Nutrient Deficiencies

Many nutrient deficiencies are implicated in seizures. These include B vitamins, such as folic acid and vitamin B6, magnesium, calcium, manganese and zinc. Because there are so many nutrient variables in the seizure syndrome, the best way to avoid it is to make sure you eat whole unrefined foods that are not stripped of these important nutrients. Then you won't have to worry about which ones you need.

Regarding sources of minerals, I am against the use of the popular and widely advertised chelated colloidal minerals sold by several multilevel marketing companies, because these colloidal minerals contain toxic

minerals such as aluminum, arsenic, mercury, iron and others. The only source of minerals other than what's in whole organic foods that I recommend is non-iodized organic sea salt and purified seawater. You can buy both in health food stores. The one I use is called Inland Sea Water by Trace Minerals. It is purified and contains very low levels of the bad guys (fluoride, mercury, etc.). I use this in cooking daily. Another good source of minerals, especially calcium and magnesium is whole organic fruits and juices.

Amino Acid Imbalances

We have discussed the seizure-inducing effects of an excess of the amino acid precursors to the excitatory neurotransmitters, such as aspartates and glutamates. This can occur with aspartame or glutamic acid consumption, or with the ingestion of minerals chelated with these amino acids (such as calcium aspartate or glutamate).

Amino acid imbalances can occur in the absence of aspartame, if one has a deficiency of the amino acid precursors that are able to slow down brain function and decrease excitability, such as taurine, glycine, and GABA (gamma-aminobutyric acid). Low concentrations of taurine have been found at the site of seizure activity in the brain. Because of the delicate balance of the excitatory and inhibitory amino acids (such as taurine, glycine, and GABA), I am against the ingestion of any isolated amino acid, no matter what the purpose. Amino acids strip minerals out of the body by chelating them, and mineral deficiencies are yet another cause of seizures. Instead, it's much safer to eat whole foods containing balanced amino acid profiles and to maximize their digestion with food enzymes.

Excess Polyunsaturated Fats

In addition to the excitatory amino acids, glutamic and aspartic acids and estrogen, polyunsaturated fats can also trigger seizures. Just as estrogen's toxic effects depend on having a ten to one ratio of progesterone to estrogen, the toxicity of polyunsaturated fats is related to the ratio of these to saturated fats (coconut oil is the best). The higher this ratio is, the greater the toxic effects of unsaturated oils. (Peat, Raymond, Ph.D., *From PMS to Menopause: Female Hormones in Context*, copyright 1997 by Raymond Peat, P.O. Box 5764, Eugene, OR 97405, p.155)

Sudden Increase in Body Temperature in Young Children

Most people are told to give their babies' aspirin or Tylenol to lower fevers, because high fevers cause seizures. Not so, says Dr. Robert Mendelsohn. A sudden, rapid rise in body temperature can cause a seizure, not the fever itself, whether it's 100 or 104 degrees. In other words, the seizure is not related to how high the temperature is, but how rapidly it rose to whatever level is reached. Unfortunately, fast-rising temperatures usually occur before you know they're happening, says Mendelsohn, "*By the time you become aware of the child's temperature, the probability is that his rapid rise has already occurred, and unless the child has already convulsed, the danger period has passed.*" Fortunately, convulsive fevers are rare, and are rarely serious. Yet many doctors prescribe long-term therapy with Phenobarbital or other anticonvulsants to prevent another seizure, despite the terrible side effects of these drugs. (Mendelsohn, Robert S., M.D., *How to Raise a Healthy Child ...In Spite of your Doctor*, Contemporary Books, Inc., Chicago, IL, 1984, p. 76)

In conjunction with this, low blood calcium alone can cause recurrent fevers in a child, as well as susceptibility to colds and other childhood diseases. Calcium-deficiency fevers--those that result from low calcium levels--are common during growth periods and when there is too little magnesium. For these, I recommend Para plus a multiple digestive enzyme to optimize digestion of whole foods high in calcium, especially organic fruits, organic or raw dairy products plus avoidance of all refined, processed foods and excess unsaturated fats.

Structural Problems

What if you have ruled out all of the above dietary or chemical causes of seizures yet you still have them.

You may have a structural problem, namely an atlas problem. Upper cervical problems, (C1 or atlas, C2 and C3) can cause seizures and many other physical problems, including headaches, strokes in the elderly and crib death in babies who sleep on their stomachs. Nearly all head injuries cause atlas problems. Loomis developed the following simple self-test to determine an atlas problem: lie on your back on a table and cross your arms (like you're in a coffin). Raise *both* legs simultaneously, keeping your knees straight, and then lower them. If you can't do this, whether you are nine or ninety, you are in trouble. Next, have a friend stand behind you, place his or her hands on top of your head (not face), and push your head *horizontally* towards your feet, while keeping your head on the table. This compresses the spinal column. When the head is compressed towards the feet, raise your legs again. If it's more *difficult* to raise them when your head is compressed towards your feet, you have an atlas problem. When your atlas has been adjusted by a good chiropractor, you should be able to raise your legs without difficulty both times. The enzyme formula for this is Sym and this really helps hold the adjustment.

Case Histories

The girl who got seizures during holidays

A mother brought her six-year-old daughter to me. The child was bright and intelligent, but had recently been diagnosed with epilepsy. Her frightened but adamant mother had stormed out of the doctor's office when he said the daughter would require lifetime usage of anti-epileptic drugs and that there was no cure. The only clue we had to the child's seizures was their occurrence during special times of the year: Christmas, Easter, on her birthday, and during celebration times when children are more likely to indulge more in sweets. Her mother recalled a seizure following a restaurant breakfast of pancakes and syrup. I suggested that the mother eliminate all refined and synthetic sugars from the child's diet and use a whole food diet. In addition, I gave her PAN, a digestive enzyme formula for sugar-intolerant people and Adr, especially for people prone to dizziness and seizures. She followed my suggestions, and the child's seizures stopped and have never returned.

A boy who lived on junk foods and got seizures

Another mother brought her 10-year-old child to me. He was on anti-epileptic drugs for seizures. His seizures were evoked by rapidly blinking lights such as those in video games and by sugar. The little boy followed a typical junk-food diet high in refined white sugar and artificial sweeteners, including products containing NutraSweet. Again, tests revealed the need for a digestive enzyme (PAN) plus Adr. The mother noticed immediate improvement when her child consumed his digestive enzymes and a relapse when the child reverted to his junk food diet.

A case of fluoride toxicity

A young boy about 8 years old presented with chronic seizures that began when the family moved to a new state. A urine test and physical exam revealed mild digestive problems, not severe enough to induce seizures, I thought. Testing ruled out structural problems. The only thing left was possible fluoride toxicity. I inquired about the family's source of drinking water. I was not

surprised to find out that the family was drinking tap water in a state that used fluoridation. In addition, the family used fluoridated toothpaste and the child received regular dental fluoride treatments. I recommended minor dietary changes, gave the child DGST that contains disaccharidases and cautioned against all sources of fluoride. The mother excitedly complied, bought a reverse osmosis water filter, dumped her fluoride toothpaste, and requested the dentist to delete fluoride treatments. When this program was initiated, the child's seizures stopped and never returned.

Structural and sugar seizures

A twenty-three year male presented with severe seizures requiring several toxic anti-seizure drugs. When he came to my office, he was so lethargic he fell asleep on my examining table. His diet was terrible, high in refined sugars, fast foods and junk foods. He also had an atlas problem. He was reluctant to change his diet but was tired of living an isolated, inactive life due to his drug-induced lethargy. I gave him PAN and Adr to help improve sugar digesting and help transport glucose into the brain, Para because he had very low calcium, a thyroid glandular and Sym because of his atlas problem. When he changed his diet, took his enzymes and got his atlas fixed, his seizures stopped, but it took him a long time to wean himself from his drugs.

The demented woman who was not demented

This story comes from *Ray Peat's Newsletter* of July 1997. A woman who was considered demented visited Peat. Since the age of 21, she had been increasingly disabled by premenstrual migraines (due to estrogen dominance). At the age of 35, she was a schoolteacher and during the summer, her doctor told her that Dilantin would help her headaches. He explained, "*Migraine is similar to epilepsy.*" Although she told her doctor that this drug "*made her too stupid to teach school,*" he offered her no alternatives and did not tell her that a sudden withdrawal from this drug could cause a seizure. When classes started, she dumped the Dilantin and had a seizure. Her doctor said that this proved that migraines were a form of epilepsy. When she was 52, she spent 20 hours a day in bed and could not leave her house alone, because she got lost. Peat gave her his natural progesterone formula. After using progesterone for a few days, her seizures stopped. She discontinued her drugs, was able to work, and returned to graduate school, where she got straight A's and a master's degree in gerontology. But, she lost 17 years of her life, because no one told her about the role of hormones in epilepsy, migraine headaches and the premenstrual syndrome.

A Summary of Major Causes Of Seizures

This list does not include brain tumors, which should be medically ruled out in all people who have seizures:

- Excess estrogen. Women should have ten times more progesterone than estrogen. The lower the ratio of progesterone to estrogen, the higher the risk of seizures, especially during menses when there is a surge of estrogen. The major cause of excess estrogen, other than ingesting it in birth control pills, ERT and estrogenic substances is hypothyroidism.
- Xeno-estrogens - environmental chemicals that act like estrogen: all pesticides and herbicides are estrogenic or estrogen mimics--that is, they act like estrogen in the body.

- Excess unsaturated oils. This includes all liquid oils except extra virgin olive oil. The list includes all seed, nut, bean, grain and fish oils--soybean, safflower, sesame, corn, evening primrose, canola, flaxseed and fish oils.
- Water retention (edema), excessive water (especially distilled water) consumption (more than two quarts) and inadequate sodium retention, prevalent in hypothyroid people and worse in hypothyroid (high estrogen) women.
- Excitatory amino acids. Glutamine or glutamic acid and aspartic acid can trigger seizures in their isolated forms. These amino acids are commonly found in mineral formulas, such as magnesium aspartate or monosodium glutamate (MSG); as isolated amino acid formulas; and in NutraSweet.
- Amino acid imbalances. In addition to the excitatory amino acids, a deficiency of the inhibitory neurotransmitters, such as taurine, glycine and GABA (gamma-aminobutyric acid) can trigger seizures. Low brain taurine concentrations have been found at the site of seizure activity in the brain.
- Fluoride. Found in many water sources, toothpastes and dental treatments, fluoride can cause seizures and many other health problems.
- Low blood sugar. Whether caused by hypothyroidism or sugar or protein intolerance, low blood sugar can cause spaciness, dizziness and seizures. Sugar intolerant people should avoid all simple and refined sugars including honey, maple syrup, Sucanat, table (white) sugar, fructose and NutraSweet and take digestive enzymes containing disaccharidases. Thera-zymes PAN, Adr and SvG contain disaccharidases to digest sugar. I always use Adr in people with seizures.
- Nutrient deficiencies. Mineral deficiencies such as magnesium, calcium, manganese and zinc, and deficiencies in the B vitamins, especially folic acid and vitamin B-6 (pyridoxine), can cause seizures.
- Sudden increase in body temperature. It is how fast the temperature rises, not the temperature itself, which causes seizures.
- Structural problems. Upper cervical problems, especially in the atlas (first cervical vertebra) can cause seizures. Nearly all head injuries cause atlas problems. Sym is the enzyme formula for this but chiropractic treatment is also indicated.

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Lita Lee, Ph.D.

<http://www.litalee.com>

Lita@litalee.com

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