

HYPOGLYCEMIA

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Hypoglycemia is one of the most common nutritionally related health conditions. It affects millions of people. Yet it is often missed by doctors and not even considered a medical diagnostic term by many medical doctors.

It is also a precursor for diabetes, which can be a later stage of the same problem. This article discusses aspects of hypoglycemia that are found in very few other places.

A BETTER DEFINITION OF HYPOGLYCEMIA

Confusion occurs regarding the definition of hypoglycemia. The word technically means low glucose in the blood. However, I suggest that the correct definition for the symptoms of hypoglycemia is not low glucose in the blood. Instead, it is low energy production and low glucose in the cells.

The reason for this is that the symptoms can be caused not only by low glucose in the blood, but also by any number of imbalances that affect the body's ability to burn glucose at the cellular level. For more on this topic, see the section near the end of this article on the glucose tolerance test or GTT.

SYMPTOMS OF HYPOGLYCEMIA

Most symptoms of hypoglycemia involve the central nervous system. The brain is completely dependent upon circulating glucose as a fuel. It has no way to store glucose, as do the muscles and perhaps other tissues. Common symptoms include:

- Extreme hunger or irritability at or before mealtime, especially for sweets and to some degree carbohydrates.
- Inability to skip meals.
- If one is late for a meal, one can become shaky, cranky, confused and even violent.
- Eating sugary meals often causes a roller coaster effect in people with hypoglycemia because the sugar level climbs steeply and then declines rapidly in several hours.

Cellular energy starvation produces other symptoms that may include fatigue, anxiety, confusion, tremors, irritability, fainting, headache, hunger, and even psychosis and other behavioral abnormalities.

Many other symptoms may occur due to sugar starvation of various organs and tissues of the body. These range from generalized fatigue to physical wasting or weight loss or weight gain due to fat deposition, especially in the belly.

Symptoms can be so varied at times as to mimic many diseases at one time or another. This is because hypoglycemia can and does affect all areas of the body to differing degrees.

SLOW OXIDIZER HYPOGLYCEMIA

Dr. Paul Eck and Dr. George Watson found that the oxidation rate affects the nature of hypoglycemic symptoms. Basically, slow oxidizers often have a chronic low blood sugar level. Fast oxidizers are more likely

to experience wide fluctuations in their blood sugar, ranging from very high to very low.

The differences have to do with the sympathetic and parasympathetic nervous systems, as they interact with hypoglycemic tendencies. The distinction is important because it affects the nutritional regimen that best controls the symptoms.

Slow Oxidizers. Let us address slow oxidizer hypoglycemia first. The adrenal hormones, cortisone and cortisol, raise serum glucose levels by converting amino acids and fats to glucose. Thyroid hormone is also required for the burning of glucose at the cellular level.

These hormones are lower than ideal in the slow oxidizer. As a result, glucose levels tend to be chronically low. As an analogy, the metabolic 'fire' is sluggish in slow oxidizers, and this contributes to chronic hypoglycemic symptoms. Often these people crave sweets, starches or salty foods to help raise their blood sugar levels. Slow oxidizers benefit from eating protein every several hours, at first, because it helps stabilize their adrenal and thyroid gland activity and therefore helps stabilize their serum glucose levels.

If the diet is too low in protein, slow oxidizers often strongly crave sweets and perhaps starches as well. This is an attempt to compensate for their low blood sugar levels.

FAST OXIDIZER HYPOGLYCEMIA

In fast oxidizers, the oxidation or burning process is accelerated. Thyroid and adrenal activity tend to be high. Also, excessive conversion of glycogen to glucose may occur, leaving these individuals with lower glycogen reserves.

If the body is placed under any stress at all, a reactive hypoglycemia occurs. There is simply no stored glucose or glycogen to deal with the emergency need for glucose. The stressor or emergency can be as simple as fatigue, exercise, hunger or any other kind of stress that occurs commonly during the daytime hours. It can occur at night as well, causing lack of sleep, or impaired dreaming.

For this reason, if stress occurs, fast oxidizers can experience severe reactive hypoglycemic episodes. This is made much worse if one eats sweets, which in themselves can be a powerful stress factor.

Like a large car engine that burns fuel quickly, one can almost literally and suddenly run out of fuel. Their glycogen reserves may be too low to handle their need for glucose. They may develop severe symptoms such as confusion, shaking and even violent behaviors. Also, they may develop strong, almost irresistible cravings for sweets and alcohol at these times.

Fast oxidizers are helped by plenty of fats or oils in the diet. These digest and burn slowly, somewhat like putting a hardwood log on a fire. They also provide more calories per gram, helping to avoid the fuel-deficiency situation.

Some fast oxidizers are aware of this and may prefer fatty foods such as steak and potatoes with sour cream. On lighter foods they may develop 'Chinese restaurant syndrome'. That is, they may become very hungry within an hour or two of eating. Oriental food is lower in fats and possibly lower in protein.

HAIR ANALYSIS INDICATORS OF HYPOGLYCEMIA

The following indicators on a hair analysis in which the hair is not washed at the laboratory are associated with a trend for hypoglycemia

* A calcium/magnesium ratio between 9.5:1 and 13.5:1. (This is newer information and may not agree with earlier articles or books on this topic.)

* A sodium/potassium ratio less than about 2:1.

* A potassium level of 4 mg% or less.

* Low levels of chromium, manganese or zinc and/or elevated copper, manganese, iron, lead, mercury, cadmium or aluminum. These are not as strong indicators of hypoglycemia as are the first three above.

Initial hair analysis levels and ratios may be all within normal limits in a few cases of hypoglycemia. This occurs because minerals can compensate for one another, which will skew the mineral ratios and may make them appear within a normal range. Hair analysis retests when the person is on a nutritional balancing program may look worse as the compensations are released. This can be confusing, and is one of the less obvious parts of hair analysis interpretation.

For this reason, in part, I often use symptoms as a key to assessing hypoglycemia if a hair mineral analysis is unclear about it. The basic symptoms above are enough to identify hypoglycemia in most cases without a possibly grueling and often inaccurate or questionable 5-hour glucose tolerance test.

CORRECTION OF HYPOGLYCEMIA

Symptomatic correction is often quite simple by eating correctly and often enough, and getting plenty of rest.

Full correction, with complete reversal of the condition, can take a few years, especially when the body is very toxic with heavy metals or if nutrient minerals such as manganese, chromium, zinc and others are very deficient. Here is the way to begin correction:

Diet.

1. 70% cooked vegetables (not salads or raw vegetables). This supplies many trace minerals. Keep meals simple, such as one or two vegetables, and perhaps a little protein. Entire meals of vegetables may be eaten to increase the quantity eaten.
2. Eat at least five smaller meals daily, or even six if needed.
3. Avoid all sweets and sugars, including fruits, fruit juices, dried fruit, rice syrup, honey, maple syrup, stevia, other sweeteners, rice milk, soy milk, and even most cow and goat milk. These are all too sweet and will upset the blood sugar.
4. Strictly limit all grains such as oats, rye, barley, wheat, rice, millet, quinoa, etc. Eat only small amounts of these once or twice daily, and no more. Avoid all bread and wheat products.
5. Have some animal protein every day.
6. Avoid beans, nuts and seeds for the most part. Once or twice weekly they are fine in small amounts. Nuts and seeds are best eaten as nut butters, such as toasted almond butter.
7. Fast oxidizers must eat 2 tablespoons of fat or oil with each meal. Slow oxidizers need about 1-2 tablespoons of high-quality fat or oil per day, at least.

This diet will reduce the major stress on the adrenal glands and pancreas, and allows these organs to begin to rebuild.

Drinking water. Adults must be sure to drink 3 quarts of spring water daily. If this is too costly, the second best option is usually to drink 3 quarts of carbon-only filtered tap water. Strictly avoid all reverse osmosis water, and I do not recommend alkaline waters or other special types of water. Most are harmful in the long run, even if you feel better on them for a while.

Rest. Everyone needs at least 9 or 10 hours of sleep nightly for maximum healing to occur. The hours before midnight are of greater value, so going to bed by 9 PM at the latest is best.

Nutritional supplements. Everyone can take what I call the basic supplements. These are:

1. Kelp capsules from Nature's Way or Solaray – 3 660 mg capsules daily or even more, possibly.
2. Calcium (750 mg daily) and magnesium (450 mg daily)
3. A powerful digestive aid taken with each meal.
4. Vitamin D3 (5000 iu daily).
5. Omega-3 fatty acids (about 900 mg daily).
6. Zinc (about 30 mg daily).

A complete nutritional balancing program. The above is not really enough supplements. In addition, I suggest following a complete nutritional balancing program based on a properly performed and correctly interpreted hair mineral analysis. This way additional supplements will be suggested, and the diet and supplement program will be refined and individualized for you. This website has many articles about nutritional balancing science and how to begin a complete program.

Reduce Stress and medical and other drug use. Reducing other stressors is very helpful in some cases. Also reduce drug use, even over-the-counter drugs. Many people take medications they do not really need, and most people use toxic household products, cosmetics and skin care items. The fewer of these one uses, the faster healing will tend to occur.

OTHER RELATED TOPICS

THE GLUCOSE TOLERANCE TEST OR GTT

The standard medical definition is a serum glucose level of less than about 65 mg/ml. However, many patients who obtain a glucose tolerance test or GTT experience symptoms of hypoglycemia, in spite of normal serum glucose levels.

I heard of one case in which a patient undergoing a 5-hour GTT ripped off her clothes and ran naked through the streets, although her serum glucose level was normal. In a less dramatic example, another patient fainted right in the chair during the test when the serum glucose was normal. Clearly the GTT is missing something.

What is missing is a better definition of hypoglycemia. It is not just low glucose in the blood. It is more related to low energy production at the cellular level. What happens during a GTT is that just giving a dose of sugar by mouth, as is done for this test, upsets glucose metabolism sufficiently that the entire glucose regulatory mechanism is occasionally thrown out of kilter and this produces the bizarre symptoms. Also, it often produces false results called false negatives and false positives.

If the laboratory measured the insulin levels during the test, as Dr. Robert Atkins, MD and others have suggested, it would give a much clearer picture. But even with this, it is only measuring sugar in the blood. This is the real problem with it.

EMOTIONS AND HYPOGLYCEMIA

Dr. Paul Eck felt that the emotion of pretense or pretending has something to do with hypoglycemia. Basically, any emotion could add so much stress that it could trigger a hypoglycemic episode in those prone to this problem. For the most part, however, I believe hypoglycemia is mainly a physical or biochemical condition that is due to improper diet, often combined with a number of mineral imbalances and other biochemical dysfunctions.

WHAT IS REQUIRED FOR CELLULAR ENERGY PRODUCTION?

The body's energy system is very complex, and has at least several components, all of which must work well for a person to have a steady, high energy level. The components are 1) a well-functioning energy pathway, 2) the correct oxidation rate, and 3) excellent enzyme strength.

1. The energy pathway. Adequate cellular energy production requires that enough glucose reaches the cells, not only an adequate supply of glucose, but also that it finds its way into the cells through the cell membranes. Once in the cells, it also requires that the mitochondria of the cells are able to burn or metabolize the glucose to form ATP. It also requires that the ATP is able to be utilized, meaning consumed or metabolized to ADP, and then recycled or reprocessed again into ATP. Any problem in these chemical pathways will cause hypoglycemic symptoms. This topic is discussed in more depth in the article entitled *How To Increase Your Energy*.

2. The oxidation rate. This is like the tune of your engine, or it is like running the engine at the proper speed, or pedaling your bicycle at the right speed. If the body's metabolic or oxidation rate is too fast or too slow, energy efficiency decreases drastically. This is similar to pedaling a bicycle too fast or too slow, or running a combustion engine too rich or too lean, or too slowly or too fast. Adjusting the oxidation rate can make an enormous difference in how you feel. This topic is discussed in depth in the article entitled *The Oxidation Types*.

3. Enzyme strength. This is a measure of how well the trillions of enzymes function in your body. To function correctly, one must have the correct minerals in the enzyme binding sites, and many other factors contribute, such as the pH of the tissues, the water content, body temperature, glandular activity and more. Nutritional balancing is somewhat unique in its decisive ability to enhance enzyme strength in the body, although it is a somewhat slow process.

MINERALS, GLANDS AND HYPOGLYCEMIA

Many nutrients act as intermediaries and catalysts in the process known to chemists as cellular respiration. Also, the major glands must function adequately, such as the thyroid and adrenal glands. In fact, other glands such as the pancreas, liver and more have to do with glucose regulation as well.

Let us begin by listing a few of the most important minerals that are required. There are others, however, that are beyond the scope of this article and, in fact, far beyond it because many nutrients must come together to allow the body to produce energy in the most efficient manner. This is a topic for a separate article or even a book. However, the major minerals to include here are:

1. Calcium. Calcium is a major electrolyte that helps regulate the activity of the thyroid gland. It is deficient in most diets today. It is found mainly in dairy foods such as milk products, along with green vegetables, and various seeds and nuts. A combination of hybrid cows and even hybrid goats (for goat milk), and processing of the milk with pasteurization and homogenization, however, render the calcium in these products much less usable.

Raw, certified dairy products are still a very good source of calcium, along with carrot juice and some cooked vegetables. Cooking these vegetables, such as light steaming for 20-30 minutes, is required to soften the fibers of the vegetables to make the calcium more usable. Otherwise, too much just passes right through the intestines and is wasted.

2. Magnesium. This critical element has an action opposite of that of calcium, but related in many ways. Magnesium, along with calcium, both relax the nervous system. Also, deficiencies of both are very widespread today.

Magnesium foods include whole grains, but not flour that is refined and white. Other good sources include nuts, seeds and a few vegetables such as carrots and other roots. Otherwise, there are few sources of quality magnesium. Supplements of magnesium may be needed in many cases for this reason.

Magnesium has a number of properties that make it extremely valuable in cases of hypoglycemia. It is needed for hundreds of critical enzymes involved in energy production. Also, it is a calming nutrient that helps the body process all manner of imbalances. This is why magnesium is so essential, especially for those with hypoglycemia.

Excessive Hair Tissue Calcium and Magnesium. With both calcium and magnesium, too much in the tissues is not desirable either. This is unfortunately a common occurrence in what are called slow oxidizers with elevated hair tissue levels of calcium and magnesium. The problem occurs because these individuals cannot keep calcium and magnesium in the blood in sufficient amounts and it moves out into the tissues in a bioavailable form.

3. Potassium. This electrolyte may sensitize the tissues to thyroid hormone. As with calcium and magnesium, potassium is also deficient in the majority of the diets today. It is only found in fresh foods, such as vegetables, meats and some fruits. It is often low or missing in refined foods, as is magnesium and calcium as well.

Cooking does not damage the potassium content of foods very much. Often cooking is required to make the potassium more absorbable by breaking down the tough fibers in vegetables and even in meats.

Potassium has many other roles, such as regulating the heart, the muscles and the nervous system. However, its main role in the condition of hypoglycemia has to do with its effect on thyroid glandular activity.

4. Zinc. This incredible mineral helps not only the production of insulin, but it is required to extend the action of the insulin molecule. Without enough zinc, the insulin molecule degrades too quickly and must be replaced instead of being recycled and used again.

For this reason, zinc deficiency, which is very common today, places a significant added burden and strain on the pancreas and its insulin production mechanism. This often leads to diabetes if the cause of the low zinc is not corrected.

Many factors contribute to zinc deficiency. Most children are born low in zinc, and this is one cause of Type 1 diabetes. Other causes are stress, the most important single cause. Zinc is used up almost immediately when the body experiences stress of any kind. It cannot be replaced fast enough in these instances. Zinc is also low in the soils of the earth, so it is low in most foods today. Refining of food reduces zinc in foods much further.

5. Manganese. This is another vital trace mineral that, as with zinc, is needed for the thyroid gland, for energy production in the mitochondria of the cells and for many other functions having to do with energy production in the body. Almost everyone is deficient in this trace element, which is now refined out of most common foods such as wheat flour.

6. Chromium. Chromium is another fascinating mineral that is responsible for insulin's ability to transport sugars across the cell membrane. Normally, the cells keep most glucose outside of the cell because too much inside is as harmful as too little. Most food today is very low in chromium, especially refined flour and refined sugars and sweets of all kinds, including even fruits.

Insulin Metabolism. Insulin, in fact, regulates sugar metabolism in a number of ways, not just lowering blood sugar levels. It also causes the conversion of sugars to fats in the liver, and more. Chromium plays a role in these important functions in the liver as well as at the cellular level. This is quite complex and is the reason why simply replacing insulin, or worse, using a drug to attempt to lower blood sugar is a very incomplete and dangerous procedure.

7. Selenium. While this amazing mineral is not central to the energy production process in the cells, it is critical for two other functions that are most important. One is the conversion of the thyroid hormones T4 to T3, the active form of the hormone. The other is for synthesis of glutathione in the liver. This is critical for the detoxification of all toxic chemicals and heavy metals from the body.

VITAMINS AND ENERGY PRODUCTION

Several B-complex vitamins are also critical for energy production. Among them are thiamine, niacin and vitamin B6. In fact, however, many of the B-complex vitamins are required in the steps of the cellular respiration cycles such as the Krebs (carboxylic acid) and glycolysis cycles.

In addition, most of the vitamins are involved to one degree or another in cellular energy production. Some function as catalysts for enzymes, while others such as vitamins A, C and D and E protect delicate structures inside the cells and outside from oxidant damage. The vitamins are the main ingredients that function in this manner.