Parkinsons Disease and Ketogenic Diets

Parkinsons Disease is a neurological disease characterized by nerve cell damage and cell death related to overstimulation by chemical neurotransmitters.

The damage begins in a brain structure called the substantia nigra. As damage progresses, symptoms such as movement abnormalities appear, and eventually, most of the central nervous system is affected, resulting in a decline in thought processes and overall brain function as well.

Recent research on the causes of Parkinsons have provided evidence that cellular mitochondrial energy dysfunction is involved, and this dysfunction results in the development of severe oxidative stress. Oxidative stress involves the production of an **overabundance of free radical and reactive oxygen species (ROS)**.

Normally, our cells have antioxidants such as glutathione and superoxide dismutase (SOD) in place to quell the free radical activity which is so damaging to surrounding cells, but when ROS are generated in large amounts, either through mitochondrial respiratory dysfunction or other causes, they can overwhelm cell antioxidant defenses and cause oxidation damage to the fatty myelin sheath or cell membrane covering the neurons. This membrane damage results in neuron dysfunction and the symptoms of Parkinsons.

Several investigators have demonstrated that the ketogenic diet can relieve some of the symptoms of Parkinsons because it helps the cell bypass the dysfunctional mitochondrial processes and repair mitochondrial respiratory damage, thereby reducing the amount of free radicals and ROS created.

A small feasibility study by VanItallie demonstrated that 5 out of 7 patients put on a ketogenic diet showed improved scores on a standard Parkinsons rating test. Although the study was small, the positive outcome will hopefully generate funding for a larger study.

Another study done in an animal model of Parkinsons showed that a ketone body called D-betahydroxybutyrate was able to block the damage done by a toxin added to a culture of neurons. The toxin should have damaged cellular mitochondrial function but the ketones kept that from happening.

Other studies here, here and here have also shown that ketone bodies can protect neurons from the effects of oxidative stress.

The area of research on using ketogenic diets to treat Parkinson's disease is still in its infancy, but I have no doubt it will prove to be promising and useful for Parkinsons patients in the future.

The Deanna Protocol for ALS (and possibly Parkinsons Disease)

Most neurologists agree on three general facts about ALS and neurodegenerative diseases such as Parkinsons disease:

1. Cells lack energy
2. Cells die
3. Glutamate, an excitatory neurotransmitter, accumulates.

The Deanna Protocol was developed by a determined physician, Dr. Vincent Tedone whose daughter Deanna was diagnosed with ALS. He teamed up with Dr. Dominic D'Agostino and other researchers and they developed a protocol to address the third factor of **excess glutamate accumulation**.

Their work focused on the actions of two normal enzymes necessary to breakdown glutamate:

1. GDH (Glutamic Acid Dehydrogenase) which breaks down glutamate to Alpha Keto Glutaric Acid (AKG) a ketone molecule
2. GAD (Glutamic Acid Decarboxylase) which breaks down glutamate into Gamma Amino Butyric Acid (GABA) an inhibitory neurotransmitter.

AKG is an important substrate for the TCA/Krebs cycle which drives cellular energy processes. A lack of AKG stops the Krebs cycle and the affected cell dies. **Low levels of GABA contribute to muscle spasticity and stiffness.** Mainstream medicine teaches that GABA can't cross the blood brain barrier (BBB) so it's of no use to supplement with it. However, in ALS the BBB isn't working so well, and when given GABA, Deanna's symptoms improved. Providing AKG as a supplement added to that improvement.

Eventually, the team developed a protocol for treating Deanna which resulted in a marked improvement in her symptoms. It included supplementation with

- AAKG (Arginine Alpha-ketoglutarate)
- GABA (Gamma-aminobutyric acid)
- CoEQ10 (Ubiquinol)
- Caprylic acid (MCT oil)

You can learn more at Dr. Tedone's site Winning the Fight. (http://winningthefight.net/)

The bottom line here is that even though the protocol was developed to treat ALS, this combination of supplements can be used to treat ANY neurological disease since they all exhibit lack of energy substrates and glutamate buildup.

More Information for Parkinson's Patients

These helpful community resources have been recommended to me by my friend Adrian:

- Neurotalk at Psych Central: http://neurotalk.psychcentral.com/forum16.html
- Parkinsons.org: http://www.parkinsons.org.uk/
- PD Junction: http://pd-junction.socialgo.com/
- Parkinsons Movement on Health Unlocked: https://healthunlocked.com/!/#parkinsonsmovement

These books on living with Parkinsons Disease were also recommended:

- The Parkinson's Disease Treatment Book: Partnering with Your Doctor to Get the Most from Your Medications
- Natural Therapies for Parkinson's Disease
- Reverse Parkinson's Disease