

Case Study

45 year old male patient with chief complaint of ANXIETY



This patient was initially seen in January of 2008. He had been suffering with anxiety and panic attacks for the past five years. The anxiety would occur throughout the day and he would even wake with anxiety in the middle of the night. His physician had prescribed Xanax, but the patient was reluctant to begin this medication. He also complained of severe fatigue throughout the day, which was worse in the afternoon. Due to hypercholesterolemia, he had been taking Pravachol for the past 5 years. SpectraCell's MicroNutrient testing revealed functional deficiencies of magnesium, chromium, zinc, coQ10, vitamin B6, and inositol. **Based upon these deficiencies, he was administered the following daily nutritional supplement protocol:**

- 1) 400 mg of magnesium in the form of magnesium glycinate
- 2) 200 mcg of chromium picolinate
- 3) 25 mg of zinc gluconate
- 4) 200 mg of CoQ10
- 5) 100 mg of vitamin B6 in the activated form of pyridoxal 5'-phosphate
- 6) 12 grams of powdered inositol

In addition to targeting his function deficiencies, he was prescribed 200mg of L-theanine BID. Foods high in deficient nutrients were reviewed. All sources of caffeine should be avoided. Basic instructions were given to assist a steady level of blood glucose throughout the day. These included staying off 'white' foods, (e.g. white potatoes, white rice, white flour, white sugar, white bread). He should consume small, frequent meals throughout the day, and avoid consuming any foods containing simple sugars within 4 hours of bedtime.

Follow up SpectraCell's MicroNutrient testing was performed six months later.

All deficiencies were resolved. The only nutrients that were still found deficient were CoQ10 and chromium. The dosages of these nutrients were increased. He felt much more relaxed and less anxious. His panic attacks had become less frequent. There had also been a drastic improvement in his energy levels.

Discussion:

Magnesium is a key nutrient in over 300 enzymatic reactions. It has been used, therapeutically, as a mild sedative, muscle relaxant and sleeping aid. Based upon the clinical picture, it seems this patient has some level of reactive hypoglycemia. A functionally deficient level of chromium and zinc might confirm this. Zinc plays a role in the synthesis, storage and secretion of insulin, while chromium affects the insulin receptor. Vitamin B6 is necessary for the conversion of glutamate (an excitatory neurotransmitter) to GABA (the brain's main inhibitory neurotransmitter). Inositol has been used to help people with anxiety whom have panic attacks. CoQ10 is the electron transporter that facilitates ATP production. This might have improved his energy levels. As with all statins, Pravachol depletes levels of CoQ10.



MicroNutrient
Testing



SPECTRACELL LABORATORIES
ADVANCED CLINICAL TESTING

MOOD DISORDERS and MICRONUTRIENTS

B VITAMINS

Many important enzymes required for the synthesis of neurotransmitters, such as serotonin and norepinephrine, are dependent on vitamin B6. Similarly, vitamin B12 and folate are required for the synthesis of SAM (S-adenosylmethionine), which is essential for the metabolism of several neurotransmitters. Folic acid supplementation increases methylation reactions in the brain, which ultimately increases levels of serotonin. Observational studies have found that as many as 30% of patients hospitalized for depression are vitamin B12 deficient, and randomized trials have shown improved depression scores after B-vitamin therapy.

VITAMIN D

Several studies have linked low levels of vitamin D with depression. In fact, studies have shown that the lower the level of vitamin D a patient has, the more severe the depressive symptoms. The cross-talk between vitamin D and specific steroid hormones that has been demonstrated in brain cells is a proposed mechanism for vitamin D's effect on depression.

VITAMIN E

In a recent study of adults with major depression, levels of α -tocopherol were inversely related to depression scores. Vitamin E is a major fat soluble antioxidant, suggesting that lower antioxidant defenses against lipid peroxidation may be linked to depression.

CARNITINE

Carnitine is known to be a powerful antioxidant in the brain and studies have shown improvement in the Hamilton Depression Scale on elderly depressed patients that were supplemented with acetyl-L-carnitine.

INOSITOL

Several brain neurotransmitters, including serotonin and acetylcholine, require inositol for proper function. In fact, double-blind trials have confirmed the antidepressant effects of inositol, which has also demonstrated clinical benefits for patients with panic disorders.

MAGNESIUM

Magnesium is a key nutrient in over 300 enzymatic reactions in the body, including the regulation of key neurotransmitters. Deficiency of this mineral has been associated with hypothyroidism, which will often manifest clinically as depression. Animal studies have consistently shown that magnesium depletion leads to anxiety-related and depressed behavior.

SELENIUM

Considerable evidence suggests that selenium deficiency leads to depressed mood. Trials have shown marked improvement in anxiety levels on patients receiving selenium supplements.

ZINC

Zinc is an important modulator of the human nervous system by mediating the action of neurotransmitter compounds. Specifically, zinc interacts with NMDA receptors in the brain and evidence suggests that zinc homeostasis is disrupted in mood disorders. Its deficiency is related to depression.

ANTIOXIDANT STATUS

A patient that has a low SpectroX™ score is experiencing significant oxidative stress, which can affect all systems in the body. Specifically, lipid peroxidation that occurs in neurological tissue can be mitigated with proper antioxidant supplementation. Since depression and stress are known to promote cytokine production, thus contributing to a proinflammatory state, a patient's ability to combat oxidative stress is critical. The SpectroX™ score helps clinicians accurately assess the total antioxidant capacity of the individual, providing insight into possible systemic inflammation that will affect depression symptoms including mood, energy level and pain.