

## **Delayed-Type Food Allergy and Chronic Fatigue**

In the summer of 1982 I attended a conference on American coal exports to the Pacific Rim. As chairman of a large oil brokerage firm I was looking for profitable areas of diversification. At that time, coal was considered a viable alternative to oil. Supplying Japanese companies seemed a logical expansion for my firm, which was already strategically positioned in the Japanese spot oil market. Little did I know how much of an impact this seemingly ordinary event would later come to have on my life.

Up until the conference I was coping fairly well with the normal levels of fatigue associated with a high-pressure job. However, about six months after the conference, I started going down hill at an alarming pace. It was not until years later that I was able to put a label on my ill health. At the time I began performing lab testing for Dr. Paul Cheney's CFIDS patients he informed me that the conference I attended, held at the Hilton at Incline Village, Lake Tahoe, was the exact time and place of the start of the current CFIDS epidemic. Lucky me.

The state of fatigue that overtook me was devastating. Although most readers can understand this, many of my associates at the time thought it was "all in my head". I struggled to maintain my work schedule; because I had no choice but to do so. The necessary changes in my lifestyle caused psychological stress as well.

In searching for a cure I sought out many health practitioners. None of them helped me. However, one day, a friend, who was trained in both nutrition and chiropractic, made a suggestion: "maybe it's food allergies". For some reason I had the distinct sense that food allergies could be involved.

Changing diet was a major turning point. My energy, mood and general well being, improved. My problem was not caused entirely by food intolerance, but it was a contributing factor. Shortly afterwards I sold my oil business, moved to southern California and put more effort toward my recovery.

The next two years were spent enjoying the weather, playing tennis and swimming in the ocean. I also maintained some work activities. The physical exercise, along with good diet, was rejuvenating. Of course, not all fatigue sufferers can tolerate much exercise; however, a moderate amount, appropriate to each case, will almost always be of benefit. I was then offered an opportunity to develop a company that provided a new laboratory technology for diagnosing food and chemical sensitivities. Given the benefits I had personally experienced by following food allergy avoidance, I decided to take it.

Alternative medicine had always intrigued me. I had studied acupuncture and herbal systems in England in the early 70's. The career change and focus on a more life promoting activity, especially one providing an opportunity to continue my study of health related topics, was a welcome one.

Most intriguing about this technology was that it could make a rapid diagnosis of sensitivities to many kinds of foreign substances, including; not only foods, but also additives, environmental chemicals, molds, dyes and drugs, from a small sample of

blood. It does this with a great deal of accuracy and reproducibility. A great need for a test like this was well recognized. Diet is of overwhelming importance. Food can be our best friend, or our worst enemy. Fatigue is one way in which adverse reactions to foods manifest.

Nonetheless, unexplained fatigue has multiple causes. It is associated with depressed levels of cortisol, HGH and other hormonal imbalances. The central nervous system is impacted; patients are emotionally depressed and often have cognitive impairment. Elevated levels of serum antibodies to EBV, Coxsackie's, HHV6 and other viruses occur. Metabolic function has been observed to switch from normal respiratory to anaerobic function. Suppressed immunity renders one prone to viral and bacterial infection, and its possible that immune system surveillance of damaged cells is also compromised. The interplay of these and other factors is complex and it is difficult to determine what is the cause and what is the effect.

One common factor is the immune system appears to be in a state of chronic up-regulation; a situation which, on the one hand, might explain fatigue symptoms, as some of the cytokines involved, such as interferon, do cause fatigue and myalgia. At the same time, this also causes the depletion of energy, nutrients and protection, thereby increasing susceptibility to infection; thus, a vicious cycle is established. It is likely that this chronic up-regulation of the immune system is triggered, or at least perpetuated, by sensitivity to environmental factors. Although this could be in the form of environmental chemicals and airborne allergens; food and food additives represent our greatest contact with the environment.

The difficulty with testing for delayed type reactions to foods or additives (and other substances) is that there are numerous different mechanisms involved. In some cases the mechanism is an immune one; in others it's a pharmacological or toxic mechanism. Sometimes a lectin (a protein that naturally occurs) in a food can directly sensitize white blood cells without involving any particular mechanism.

Most blood tests, as well as scratch testing, measure only one mechanism. An example of an immune mechanism would be allergen specific IgE antibodies. Blood tests using RAST or ELISA methodologies ("sandwich" assays that tag antibodies with a radioactive or enzymatic marker which can be "read" or quantified with the appropriate instrumentation) can measure the presence of antibodies specific against a particular antigen, such as an airborne pollen grain, dust mite or a food. This kind of test can be quite useful for that type of allergy that involves IgE antibodies; the so-called "immediate" or "classical" allergy symptoms like hay fever, etc. However, it's not accurate for the delayed type reactions to foods and other substances that promote the chronic and low-grade symptoms often associated with fatigue syndromes. IgA and IgM antibodies might be involved in some cases; but not frequently enough to provide reliable information. Moreover, measurement of IgG antibodies is very misleading.<sup>1</sup> IgG is the most prolific class of antibody and its role is almost always protective and not symptom promoting. Normally, food specific-IgG will appear high as a result of exposure to the particular food; however, there is no direct link with pathological states. Thus this test will yield many false positives. Also, many chronic fatigue patients will be deficient in IgG and the test will also report an unacceptable number of false negative results.

Other components of the immune system, pharmacological, toxic mechanisms or lectins may be involved. The different possibilities are too vast to justify looking at only one such mechanism. For this reason, most physicians agree that the “gold standard” is an oral challenge. This involves going on a fast, or a virtual fast, consuming only a small number of hypoallergenic foods for ten to fourteen days. This is followed by careful re-introduction of single foods, one every four or five days, with careful monitoring of symptoms. Such an approach can be used in a research setting, but is impractical when it comes to routine clinical application. It also suffers from the drawback that a presumed “safe” food may not be so. Considering these problems, the new test, known as the ALCAT Test, was developed.

The ALCAT Test is not mechanism dependent. It can measure the final common pathway of all of the mechanisms that might be involved in such a reaction, whether immune, pharmacological or toxic, or caused by a lectin or other food component. It does this by using a specially designed hematology analyzer that counts and sizes the total population of white blood cells when the whole blood is exposed to a battery of test substances. The test is carried out while the blood is still fresh enough that the cells and serum proteins involved in such reactions are still viable. In this sense it is really an ex-vivo test.

The sensitivity of the ALCAT Test is also enhanced by the measurement of platelet reactivity to the test substance. Unlike serum tests (like RAST and ELISA) whole blood tests have the advantage of containing all of the cells, the various mediator and inflammatory chemicals they produce, all of the different types of antibodies, serum proteins, like the complement system, and other elements that are involved in an adverse reaction to a foreign substance. After the analysis is performed, a computer compares the blood sample that has been exposed to the test substance, be it a food extract, environmental chemical, or other foreign substance; and the same blood, identically treated but without the test substance. Thus this functional test has an internal control; that is, comparing the patient’s blood with the allergen to the same blood without the allergen. It reveals the particular effect that food or substance has on that particular individual.

What the test reports, specifically, is whether or not that particular substance causes the cells to swell, shrink, or disintegrate in response to that substance. The results of this test correlate 96% with a double-blind placebo controlled oral challenge with food additives and 84% with double-blinded food challenges.<sup>2,3</sup> Independent studies show the results are 92% reproducible.<sup>4</sup>

Food and chemical sensitivity is significant to anyone suffering from CFIDS. Doctors who have applied the results to patients with fatigue syndromes report about significant improvement. A study at Baylor Medical College reporting on 50 subjects with fatigue symptoms showed a 51% improvement over one month.<sup>5</sup> Dr. Peter Fell, an allergist from Oxford reported 66% success with a small group of fatigue patients.<sup>6</sup> Dr. Barbara Solomon, who practices environmental medicine in Baltimore reported 60% of 97 patients with tension fatigue syndrome improved.<sup>7</sup>

We don't yet know the precise mechanism; however, apart from fatigue, CFIDS shares some other common features with both AIDS and cancer. Both are obviously disorders where normal cellular metabolism is disrupted. In these conditions, toward the latter phases, the patient experiences wasting of body tissues, a condition known as cachexia (Greek for "bad state") as the cells derive energy not from normal respiratory metabolic activity but from anaerobic processes that produce lactic acid as a byproduct. According to Cheney, a similar metabolic shift occurs with many CFIDS patients. The lactic acid is then converted by the liver into sugar that is then re-cycled and burned for energy in the cancerous cell. This causes a depletion of the body's reserves and, consequently, a wasting of tissue. We do not know what causes this, but it certainly would explain the malaise and wasting phenomenon of CFIDS.

A recent study on the ALCAT Test suggests that food sensitivities cause serious impairment of immune system cells. A laboratory study conducted at the University of Rome by Dr. M. C. Mele and co-workers examined the functionality of immune system cells following whole blood exposure to ALCAT-positive foods, ALCAT-negative foods, and controls. The respective blood samples were challenged with a substance called Zymosan. Zymosan (a yeast product) has the effect of causing competent immune system cells to release inflammatory mediators that would normally protect against bacterial infection.

The quantity of mediator release, and hence the functionality of immune cells, can be measured by adding another substance called "luminol" into the mixture. It will combine with mediators released from properly functioning white blood cells and will emit light which can be detected with the appropriate chemo luminescent analyzer.

It was observed that blood cells that had already responded to a food antigen challenge, *in vitro*, as determined by the ALCAT Test, were no longer capable of reacting to the Zymosan challenge, suggesting that the presence of an incompatible food in the blood would exhaust the resources of the immune system cells. The correlation of the severity of the reaction to the food substance (as measured by the ALCAT Test) and the loss of function of the cell, was extremely high.

If what was observed in the test vial is a reflection of what happens in the body, and there is sufficient evidence from other clinical studies involving the ALCAT Test to expect that to be so, then we have a model which at least partially explains how food sensitivity causes chronic up-regulation of the immune system, and the associated fatigue, myalgia, susceptibility to infection and other CFIDS related symptoms.

Clearly, CFIDS represents a syndrome with multiple causes, all of which involve the immune system. Immune system response to sensitizing factors in the environment appears to play a role, and probably an important role, in initiating and/or perpetuating CFIDS. It is probably not the only factor. CFIDS is not a condition that develops overnight, even though a particular event may trigger it. Thus, it is not a condition that is likely to resolve overnight. A multi-disciplinary approach, involving the proper diagnosis of food and chemical sensitivity, and the appropriate dietary modifications, along with other assistance from a qualified health professional, will aid in its resolution.

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