Hey Lyme Disease, Meet Leptin!

Readers Summary

1. Why is lyme misunderstood
2. Is lyme connected to fibromyaliga, mold, and chronic fatigue syndrome?
3. How do we test for it and how might we treat it?
4. How does leptin tie into this story?

I do not believe there is a more misunderstood disease by conventional medicine than Lyme disease and Fibromyalgia. Many healthcare providers do not even think FM exists to the determent of millions of people. It is estimated that ten million people suffer from these diseases today. 75% of them are women. The reason for that is because leptin is involved, and as you all know it is a sexually dimorphic hormone. These are diseases that affect the fat cells in all parts of our body. They also cause issues with adiponectin, which is also sexually dimorphic. Many women will be glad to know that fact. Understanding Lyme disease actually helps you understand FM very well.

Both diseases cause abnormal activation of an immune mediated pathway that takes over cytokine production in the fat cells that line our GI tracts, respiratory tracts, sinuses, and many other organs. Most know that Lyme is most commonly associated with a tick bite, and the host gets infected with spirochete bacteria. What most do not know, is that this tick liberates a neurotoxin that causes most of its symptoms. This neurotoxin activation is common to many diseases just like Lyme disease. FM, Chronic Fatigue Syndrome, Sick building Syndrome, and mold exposure are just a few. All these diseases activate the same pathway, and this is why they have features that are quite similar clinical findings. Making these connections clinically helped me tie this all together. Since I came to a deep understanding of how important leptin is to our body several years ago, it made complete sense to me to think all these diseases might have a leptin link because of the constellation of symptoms were all tied to specific cytokine activation. This is precisely how leptin resistance develops too. This is how a change of perspective might help a physician see a problem in a new way. It is precisely how Evolutionary medicine prism has allowed me to come to bio-hack just about any disease we face as a species now.

For example, fibromyalgia has a massive influx of inflammation from the GI tract or respiratory system that causes severe leptin and circadian dysfunction due to neurotoxin and can be measured by Visual Contrast Sensitivity biomarker test. These small neurotoxins are stored in fat cells, and when they are released from the fat, the toxins end up circulating through the fat-containing tissues of the body to cause their havoc.

These new toxin-producers include the following:

- dinoflagellates, such as Pfiesteria, ciguatera and chattonella;
- fungi, including stachybotrys and fusarium;
- bacteria, such as pseudomonas fluorescens;

- spirochetes, including Lyme disease-causing borrelia;
- blue-green algae, such as rapidly reproducing microcystis and cylindrospermopsis.

This is what causes these diseases: Biotoxins, not crazy ladies!

It seems that conventional medicine has not stayed up with the published literature. Few people seem to know this information. Moreover, FM is most certainly a real disease. It is not well studied, and the treatments for it quite different than one would conventionally expect. The reason for this is because medicine today has a rudimentary understanding of how inflammation and the brain connect together. The bridging principle that ties these concepts together is leptin once again.

Specific protocol for Fibromyalgia/Lyme disease/Chronic Fatigue patients:

Perform the Contrast Sensitivity Test first. This test functionally creates a binary output system by assessing the nerve-function of contrast in part of the optic nerve. The assessment provides an accurate model for the overall effect of neurotoxins on the patient's system. It evaluates two sets of nerves in the eye that allow one to differentiate between white, black, and gray, on a gray background. It has been found that a subject with biotoxin-associated illness will demonstrate a deficit on this non-invasive neurological evaluation in that they will not be able to identify the direction of various patterns presented. Failure to successfully complete this test is a strong indicator of a biotoxin illness! Though it is possible for a person impacted by biotoxins to pass the test (a false negative result), this occurs only in about 8% of test subjects. Thus, the VCS test supports diagnosis in about 92% of affected people. False positives are quite rare.

There are specific genotypes associated with specific susceptibility to biotoxins. For patients with Lyme disease or mold exposure, approximately 25% of the population has a genetic predisposition in coming down with these diseases which results in an inability to clear biotoxins naturally. This is due to a defect on the Human Leukocyte Antigen (HLA DR) gene set on chromosome 6. The genetic test is called HLA DR, and it is commonly known as a test which provides insight into possible organ rejection after a transplant operation. One can then use an interpretation guide written by the protocol's founder, Dr. Shoemaker, which maps the HLA DR combination findings to specific conditions which may be associated with multiple biotoxins diseases. The biotoxin can bind to Toll receptors in the gut or in fat-cells and cells that line blood vessels, resulting in the productional array of cytokines which are involved in immune response and inflammatory processes. MMP9 is a superb marker for the presence of excess cytokines production from any inflammatory disease. I often recommend people consider getting in cases that seem unsolvable. It is a great detective test for one to use in any undiagnosed inflammatory condition.

MMP9 appears to be responsible for delivering inflammatory compounds out of the blood and into the brain, which causes plaque formations similar to those seen in MS too. Most MS patients will have extremely high levels of MMP9 in

their serum and tissues. In Lyme disease, MMP9 levels may skyrocket as the result of treatment with antibiotics, and the resulting bacterial die-off in what is commonly referred to as a Herxheimer reaction. During this reaction, the symptoms usually get more severe. They often can be mitigated by using cholestyramine (CSM) to bind the biotoxins that are circulating in the fat. If you are dealing with Lyme disease only based on the HLA DR array, you must first kill the spirochete and then go after the neurotoxins. If you give a Lyme-infected person antibiotics and they are not HLA-susceptible, they generally have an uneventful recovery. Not everyone falls into this situation. Lyme disease treatment can be followed with a simple blood test called a CD57+ white blood cell test. Two physicians found that CD57+ T Cells are lowered in Lyme disease progression. When Drs. Stricker and Winger discovered that CD57+ NK cells were low in chronic Lyme disease sufferers, we had a test to follow patients' clinical improvement or decline. This gave us an opportunity for infectious disease practitioners to utilize a simple blood test in the diagnosis of chronic Lyme disease. Since we can now follow treatment progress,s it also clearly helps us determine treatment endpoints as well. Just as HIV patients have used their CD4 T-cell count, Lyme patients now have a fairly reliable marker of the status of their illness.

What about the common pathway of all these diseases?

An increase in cytokines release (IL-8) may also trigger auto-immunity if the process is chronic. IL-8 is a cytokine amplifier for our immune system. There are three key types of antibodies observed in those with biotoxin-associated illnesses. These are **myelin antibodies** (the protective sheath around nerve cells), **gliadin antibodies** (a protein found in gluten), and **cardiolipin antibodies** which impact circulation in the arterioles of the vascular trees in our bodies.

There may be notable increases in markers which reflect activation of the complement system, namely in C3a and C4a. There is a significant difference in C3a and C4a levels between controls and the Lyme or mold population. In fact, C4a levels invariably become elevated, often as early as twelve hours after a tick bite. In the case of those with a mold-susceptible HLA type, C4a significantly increases within four hours after re-exposure to a moldy environment. C4a can be a helpful marker in determining whether or not a remediated home is still a danger for someone with mold biotoxin susceptibility. If C4a levels have been reduced via appropriate interventions and C4a levels rise upon reintroduction to the suspect environment, it is a sure sign that the environment is not safe for the patient. You can also run a home air quality inspection for about 1000 dollars to back up the testing. Sometimes the exposure is in a car or at work. This can be a messy situation if it occurs diagnositically

A word about CD57+ testing: If you would like your health care provider to order the CD57 NK test for you, your blood sample needs to be drawn into an EDTA tube (lavender top) on Monday through Thursday and sent immediately to either LabCorp in Burlington, NC, or Clinical Pathology Laboratories (CPL) in Austin, TX. LabCorp and CPL are the only two labs that perform this test

properly. Quest does NOT. The LabCorp test code is #505026 and is named HNK1 (CD57) Panel. The CPL test code is #4886, CD57 for Lyme disease. The test is time-sensitive, and must be performed within 12 hours of collection, so blood should not be drawn on a Friday or results may be inaccurate.

Where does leptin enter the picture on these diseases?

When biotoxins from any source cause amplification of cytokines, they chronically elevate serum leptin levels. Remember from my leptin series, I told you that leptin is chemically similar to IL-6. LR also occurs because of inflammation in the gut that penetrates the brain and deactivates the leptin receptor. The same thing happens in these diseases we are talking about today. This is a great example of a new brain gut axis disease that medicine just has not put together yet. The biochemical connections however are paramount in understanding how these all weave together. When leptin increases as the result of a biotoxin exposure, there is a simultaneous decrease in alpha MSH secretion from the hypothalamus (alpha melanocyte stimulating hormone). When leptin increases and alpha MSH decreases simultaneously we can completely explain their clinical symptoms. These patients become naturally heavier with all these disease and commonly become very resistant to any weight loss techniques that do not link to repairing leptin receptor functioning.

Lowered alpha MSH is the key common finding in all these biotoxin diseases. It controls the biotoxin pathway as its major anti inflammatory compound. Lyme disease, chronic fatigue syndrome, FM, mold illness, and any other biotoxin illness regardless of the source of the biotoxin, we find reduction in MSH in 95-98% of patients!

When MSH levels are low, people also become sleep disturbed because of damage to the hypocretin neurons that modulate sleep. We can test for this by seeing lowered DHEA levels and elevated IL-6 levels. They all tend to have chronic pain, and this is due to the blockade of the endorphins pathways by the lowered levels of alpha MSH. We have known about the effect of alpha MSH on pain for sometime in anesthesia literature, but this is usually modulated via excessive omega six components in our diet that drive series two prostaglandins to cause chronic pain development. This is a reason why many more pain specialists and pain patients should consider sampling alpha MSH levels to help their patients who suffer from chronic pain of any source. It is also why many patients I have treated with the Leptin Rx have gotten major pain relief before they had to have any spine surgery! A big finding in these patients is they all experience some version of the “leaky gut syndrome”. Too bad allopathic medicine does not recognize this symptom. Maybe this underlies why they have never solved the mystery of these diseases too! This happens because of the massive release of cytokines through the amplification properties of IL-8 in the gut mucosa. Often, their recovery from any illness is usually delayed, and they seem to be chronically sick or suffering from long lasting adrenal fatigue symptoms. There is a major neurologic reason for this. Reduced levels of alpha MSH are initially correlated to elevations of cortisol and ACTH but as the toxins are allowed to amplify, the immune

response responds by making more cytokines, and eventually there is a dramatic reduction of production of pituitary levels of ACTH and cortisol. This cause people to have very low levels of cortisol in 24 hour collections, and we generally see major changes to the normal circadian cycle of cortisol on salivary samplings. Many people with chronic adrenal fatigue actually suffer from this problem and never realize it. Very few physicians have made these connections because they do not understand the importance of leptin and inflammatory brain diseases. Obesity, FM, Lyme Disease, and mold intoxications are all very similar symptoms of the same disease processes. When I hear a patient has chronic symptoms that do not respond to classic my classic leaky gut Rx, I begin to think I am dealing with Lyme disease, FM or another chronic neuro toxin linked disease that is still uncategorized. Another clue for the surgeon in me is that these patients tend to develop multiple antibiotic resistant coagulase negative staph colonization (MARCoNS). We see this in the hospital when they come in for surgery, and we are told that our patient's nasal swabs are MRSA positive. This is a major clue to the surgeon or physician that something else maybe cooking than the standard diseases we see with a leaky gut.

These patients also have frequent thirst, and they usually are tested for diabetes because of this symptoms prominence. This is another neurologic manifestation, due to lowered secretion of the posterior pituitary hormone called, anti-diuretic hormone (ADH). Patients tend to show higher levels of sodium on their chem 20 testing, and they also have a higher serum osmolarity if it is test. Often it is not, because this disease is a very deep bio hack that most physicians do not learn in training. Many patients will complain of a tremendous loss in libido due to a lowering of all the sex hormones and the precursor hormone DHEA. This symptom is worse in women than men, because women have higher leptin levels and are far more sensitive to changes in its normal physiology by the lowered alpha MSH levels. Alpha MSH is a major modulator of leptin function. All these can be found with testing, if one knows what you are seeing clinically. People with low alpha MSH levels also are very sensitive to the sun, because they can't generate melanin production in their skin. They tend to be fair skinned. I have long thought this was the mechanism of how vitiligo begins. If you amplify the cytokine signal long enough, it will totally destroy your ability to replenish melanocytes and your skin will bleach. It also plays a role in physiology. I think this is where alopecia areata, alopecia universalis, and other autoimmune diseases of the skin and hair come from.

MSH is intricately involved in the production of melatonin and endorphins in the brain. This is where my neurosurgery training really tied a lot of the pathophysiology together. Alpha MSH is cleaved off the larger POMC protein that is made in the brain. This quotient of the cleaving causes a lack of circulating endorphins in our CSF fluid, and this increases our perception of pain in all parts of our body. This is why Lyme and fibromyalgia patients have so many muscle aches and pains. Everything has a biochemical reason when you follow medicine from an evolutionary prism. This is a huge benefit to thinking about diseases in a new way. MSH also regulates the protective cytokine responses in the serum of our blood, skin, digestive tract, and respiratory membranes. Lowered MSH in these areas also results in

abnormalities in production of cortisol and fluctuations in ACTH (adrenocorticotropic hormone) which regulates adrenal function. People with chronic adrenal fatigue often have biotoxin disease and rarely know it. One way to assess it is to get their alpha MSH levels tested at the same time as their C4a levels!

Treatment

1. **If you are dealing with Lyme, it must be treated with 3 weeks of antibiotics to kill the spirochete bacteria** and then try to clear the biotoxins. When this bacteria is killed, expect a serious Herxheimer reaction and your symptoms to get worse before they get better. There is a treatment option for this, however, to mitigate this biochemcal process.
2. **Cholestyramine (CSM) is a resin which has been historically used for lowering cholesterol levels.** It is very effective in clearing the remnant biotoxins as well. It is very cheap to use as well. It has a positive charge that binds to a wide range of different low molecular weight, negatively charged toxins and helps to shuttle them out of the body through the digestive tract. It is also not systemically absorbed, so it is pretty safe for most people. CSM use usually leads to a dramatic fall in C4a, and if it comes back quickly, you must assume the Lyme is not killed or the mold/toxin is still present in your body or the environment.
3. **Treatment for biotoxins may utilize targeted gene therapy using Actos.** Actos is a dirty word for most diabetics following a primal template, but in these diseases it may be a life saver. Actos is a drug approved for the treatment of diabetes that has recently become black boxed, because of an increase in bladder cancer when it is used over a year. It was banned in Europe for this reason recently. For this indication, it is not used that long. This drug limits the effects of the Herxheimer reaction that occurs in killing off the bacteria's associated with this disease set. It has a significant number of benefits for those with biotoxin-associated illness. Actos lowers leptin, lowers MMP9, raises Vascular Endothelial Growth Factor, and positively PPAR-gamma all while improving insulin resistance and lowering system inflammation by slowing cytokine amplifications that occur in these diseases. It is one of the most important interventions known in treating biotoxin illnesses, because it seems to block the cytokine storm or Herxheimer reaction that occurs in 50% of Lyme patients. The interesting thing is that Actos will not work if you eat a SAD, or high carbohydrate diet, because of leptin effects on NPY in the hypothalamus. It works best if one eats a ketogenic paleolithic diet.

I hope you found this interesting. It is another piece in the Quilt that shows you that everything is connected at some level, and that we should to continue to solve the puzzles of diseases that allopathic medicine just does not understand by using an evolutionary biologic prism to see these diseases. I put many of these links together over the last 7 years after I came to realize the importance of leptin to human biology. There is not one disease we can't solve if we think about the disease using what evolution has taught

us.

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