

An Integrative Approach to Lyme Disease and other Tick Borne Diseases

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What is Lyme Disease?

There is a new pandemic in this world that is becoming ever increasing in prevalence and severity. It is a "great imitator" of many diseases, and it is often very difficult to pinpoint with the lab tests currently available. Because of this, many people are diagnosed or labeled improperly with Autism Spectrum Disorders, Parkinson's Disease, Multiple Sclerosis,

ALS, Fibromyalgia, Mixed Connective Tissue Disorder, Chronic Fatigue Syndrome, Chronic Migraine, being a Malingerer, Candidiasis, Osteoarthritis, among several other diagnoses. Fortunately, when the proper diagnosis is finally made and the causative co-infection has been determined, then the symptoms of these aforementioned "disease labels" can be removed and the ongoing diagnosis and treatments reflect Tick Borne Disease (TBD).

Like many other physicians, my initial understanding was that only a tick borne spirochetal organism called, *Borrelia Burgdorferi*, causes Lyme disease. This can present "only" from a characteristic "target-like" expandable skin rash, Erythema Migrans (EM). Unfortunately, I have since learned that only approximately 20-40% of the Lyme disease cases present with a rash and the same small percentage of patients may report that they can recall a tick bite on their skin. Many people who have a tick borne disease can present with a wide variety of nonspecific systemic complaints that may affect any part of the body. Appropriate and early antibiotic treatment can usually and successfully treat many with the infection (if it's only *Borrelia Burgdorferi*). However, in some people who receive a tick bite, wherein the tick makes an attachment under the skin, in as little as fifteen minutes, the tick can feed on the host's blood and expurgate (vomit) its stomach contents under the skin of the person. However, the tick bite can infect that individual with a whole host of bacterial, fungal, viral, parasitic organisms, which can lead to major medical complications. Please remember, ticks do NOT only transmit Lyme disease from *Borrelia*, but can transmit many other co-infections as well.

In some people, a tick bite can lead to disseminated infection and disabling physical, psychological and cognitive manifestations. Many can manifest with very puzzling systemic symptoms that can occur throughout the body, which lead to very complex and many times, inaccurate, lab tests. Many individuals with a long standing tick borne disease, may not be able to adequately activate the proper immunoglobulins which are needed to have the lab tests show "IGG or IGM bands", in order for the CDC guidelines to be met to qualify them as having true "Lyme disease". According to the CDC, you need to have five of nine IGG bands positive, or two of three possible IGM bands positive, in order to make the diagnosis of Lyme disease. Unfortunately the lab testing that is performed by the classic labs, Lab Corp. or Quest

Diagnostic Labs, only test for a limited number of bands and a limited number of *Borrelia* species. Therefore, a great percentage of true "Borrelia infections" go undetected and under diagnosed.

Because of this, Lyme disease has been ignored or trivialized by many in the medical profession for more than a quarter of a century. There are two extremely different views on Lyme disease management in the US and this adds to the complexity of the diagnosis and management of treating people. The Infectious Disease Society of America (IDSA) believes that Lyme disease can be easily detected and "cured" with one antibiotic treatment that usually lasts for 14 days. This is what most physicians, clinics, emergency rooms, and health practitioners follow as their guidelines. The ILADS (International Lyme and Associated Diseases Society) point of view is much more encompassing and allows for many variables in diagnosing and treating TBD. Most ILADS practitioners are highly trained to recognize that standard blood tests to diagnose Lyme disease are highly unreliable and that even thirty days of antibiotics is often insufficient. Chronically ill patients therefore go from doctor to doctor until they find a physician well versed in Lyme disease management and treatments. Most LLMDs (Lyme Literate Medical Doctors) need to receive many hours and years of comprehensive training in order to be able to recognize and identify those seronegative (by CDC guidelines) patients, who truly manifest as Tick Borne Disease patients, and then learn the appropriate treatment guidelines established by ILADS, in order to begin to help the TBD suffering person.

Lyme Disease Symptoms

The most common symptoms related to Lyme and its co-infections are as follows:

- Fatigue, tiredness
- Headaches
- Migratory joint pains
- Rash recurrent and non-specific
- Neck stiffness and back pains
- Numbness and tingling and/or burning of the extremities
- Difficulty concentrating or reading
- Mental confusion, difficulty thinking, "brain fog"
- Forgetfulness, poor short term memory

- Significant post exercise fatigue which can be debilitating at times
- Disturbed sleep: too much, too little, early awakening
- Difficulty with speech or writing
- Air hunger and dyspnea upon exertion

(Above) The Lime Tick Spirochete

Causes

Borellia spirochetes have also been found in mosquitos, spiders, lice, and mites which can also be a vector in the transmission of Lyme disease. Recent research¹ supports that Lyme disease should be considered a sexually transmissible disease and the Borrelia spirochete is similar in its features to that of syphilis (treponema pallidum). There have been several papers written on the transmission of tick borne diseases, which can be trans-placental and can also be transmitted via breast milk. This is obviously a significant problem since people usually only think about tick borne diseases when the person gets an actual tick bite.

Tick borne diseases, as stated above, usually have a variety of infectious agents that can lead to a variety of conditions. This contributes to the difficulty in isolating which antibiotic and treatment regimen will provide the best outcome to help the patient. The following list is a sampling of what is known today as infectious agents in the literature associated with tick borne diseases:

Bacterial Lyme disease (Bb), other borrelia species (B. afzelli, B. garinii), Relapsing fever borrelia (B. hermsii, B. miyamotoi,) Ehrlichia/Anaplasma, Bartonella, Mycoplasma, Chlamydia, Rickettsial infections, i.e. RMSF, Typhus, Q-fever, Brucella, Tularemia, STARI, and tick paralysis.

Parasitic Infections Babesia and other piroplasms, amebiasis, giardiasis, strongyloides, pinworm, and other intestinal parasites.

Viral Infections Tick borne: tick-borne encephalitis virus (TBEV), Omsk Hemorrhagic Fever, Kyasanur Forest Disease (KFD), Congo-Crimean Hemorrhagic Fever (CCHF), Powassan encephalitis, and the newly discovered "Heartland virus": a phlebovirus (NEJM 2012), Mosquito-

borne: WNV, EEE, WEE, plus other viruses which may reactivate (CMV, HHV-6, EBV.)

Candida and Other Fungal Infections Histoplasmosis, Aspergillosis, and Coccidiomycosis

Laboratory Testing

Once we realize that there are multiple infectious agents to be considered, we must then figure out which labs are needed to be used for best accuracy and for proper diagnostic proof. Many of the useful specialty labs are not covered by insurance and are quite expensive. Therefore, the prudent physician will order these when absolutely needed for disease confirmation. Many times the practitioner must use his or her medical ingenuity in determining which co-infection may be a component of the conditions that the difficult patient is presenting with. Asking whether the patient suffers with air hunger, night sweats; unexplained fevers, and mental confusion can be helpful as all these may trigger thoughts of a Babesia co-infection. Acute severe headaches with rash and fever may suggest Erlichia, RMSF, or Anaplasmosis. Bartonella patients typically have severe foot pain upon arising in the morning with rage, anger, and other psychiatric complaints. They occasionally can have a typical striated rash on their trunk. Unfortunately, there are no hard and fast rules that every Babesia infection has all of the classic symptoms of Babesia and no certainty that the labs will be accurate. This leads to a great problem in the proper diagnosis and treatment of patients with TBD.

Another major problem with eradication of the Lyme spirochete from the host is the fact that if the initial short course of antibiotics does not adequately resolve the illness, the spirochete can form cystic structures which can lay dormant if a cyst busting drug (or effective herbal remedy) is not used. Ideally, one should combine drugs to address all three forms of Borrelia simultaneously (cell wall, cystic, intracellular compartment) secondary to the ability of the organism to shift between different forms, go dormant, and evade immune surveillance. Be sure your physician treats biofilms, and continues treatment until you have been two months symptom free.

Once the tick borne disease gets the opportunity to thrive within the host, multiple co morbidities can occur within the body to cause the severe fatigue and complications associated with Lyme disease. The

various systems in the body can experience a multitude of dysfunctions and in order to resolve the tick borne complications, your physician should correct the abnormalities listed below in order to restore you for more optimal recovery.

The "Chronic Lyme Patients" may need to be tested for:

Immune Dysfunction Auto-immune joint diseases may be tested for as may vitamin D3 levels (60-80 range is ideal).

Inflammation CRP, C4A, and inflammatory cytokines can be evaluated.

Toxicity Multiple chemical sensitivities, environmental illness, heavy metals, mold, and neurotoxins. A provoked urine challenge is extremely helpful for determining heavy metal body burden.

Allergies Foods, drugs, and environmental allergens can be investigated.

Nutritional & Enzyme Deficiencies Functional medicine abnormalities in biochemical pathways.

Mitochondrial Dysfunction How the cell of each person makes energy is based on the function of their Mitochondria.

Psychological Disorders Depression, anxiety, schizophrenia

Neurological Dysfunction

Endocrine Disorders Hypothyroidism, secondary hypogonadism

Sleep Disorders Insomnia, sleep apnea

ANS Dysfunction +/- POTS Postural induced blood pressure drops, which can lead to severe fatigue and fainting episodes

G.I. Disorders Malabsorption, yeast overgrowth, Bacterial Dysbiosis (abnormal bacterial colonies in the intestinal tract).

Elevated LFTs Liver function testing, the Liver is the primary organ for detoxification of the body, Many times Lyme patients will have increase liver stress which is measured by LFTS.

Pain Syndromes

Deconditioning occurs when a person cannot exercise and his muscular control becomes less than desirable. Chronic fatigue issues lead to greater deconditioning problems, especially when joint pains are present.

Many times, correcting these dysfunctions will markedly help alleviate the symptoms of Lyme related illness. When the practitioner gets "stuck" in the care of the TBD patient, the deficiencies above need to be corrected and optimized. I find great help when I detoxify the patient with a safe chelation protocol and add hyperbaric therapies to reduce the inflammatory cytokines.

Conventional Treatments: Why to Consider a Healthier Approach

TBD treatments carry a multitude of needed guidelines and the correction of these multisystem deficiencies aids greatly in the recovery rate. Usually after the patient has been treated for many months with antibiotics and/or herbals, the immune-boosting therapies may need to continue for a long time to aid with preventing reoccurrence.

Most people seeking care for tick borne related disease begin their journey with a primary care physician. A maximum of usually 14-21 days of one antibiotic is typically offered after a "known" tick bite is experienced or a blood test is positive for Lyme disease. If the person reports back to their physician that he or she is not significantly improved, they are usually diagnosed as having Chronic Fatigue Syndrome, or Fibromyalgia, or "post-Lyme Syndrome." Usually an antidepressant or mood stimulant is prescribed and recommendations to follow up with a psychiatrist are discussed. If a child contracts Lyme disease and hasn't completely improved, often he or she is given the diagnosis of ADHD or autism and is then prescribed Ritalin or Concerta-like stimulants to aid with their cognitive delays and behavioral/anger issues. Behavioral therapists are suggested as well, but these efforts are a "band-aid" for the problem and not addressing the root of the problem, which is the effect of TBD on the neurological system.

Instead of resorting to the drastic measures described above (don't forget the serious health risks that exist for psychiatric medications), we need to attack the real culprits wreaking havoc on the health of the growing number of individuals with tick borne diseases.

(Above) The Classic Tick Bite “Bull’s Eye”

Implementing a Healthier Approach

Nutrients and Supplements

Many commonly used nutraceuticals have been very beneficial including:

Low Dose Naltrexone (LDN) LDN can help with immune regulation, pain control, and reducing inflammation—all of concern with tick borne diseases.

Vitamin D3 The vast majority of Lyme disease patients have a Vitamin D deficiency.

Transfer Factor This is an immune booster that helps protect the various systems in the body from disease.

Artemisia Artemisia is very helpful for the cystic lifecycle form of Borrelia infections. It is also an immune booster and is helpful for parasitic treatment.

Coenzyme Q 10 (Coq10) Coq10 is vital for mitochondrial repair and cellular function. It is also the most important rate-limiting step for making ATP in the cell.

Alpha Lipoic Acid ALA potentiates antioxidant function and helps with herxheimer reactions.

Carnitine is helpful for cellular function and helps bring fatty acids into the cell to make energy.

Vitamin C Both orally and intravenously administered vitamin C can markedly improve the immune system and the ability to fight off infections.

Zinc Insufficient zinc affects white blood cells needed to fight infection.

B complex these have antioxidant properties and are important for energy production.

Methyl Folate Many people have MTHFR, a gene mutation, and have difficulty with methylation, which can be improved upon with methyl folate.

Magnesium Lyme disease depletes magnesium from the body.

Glutathione It is the most important intracellular antioxidant, usually depleted in Lyme sufferers.

N-Acetyl Cysteine NAC boosts the production of glutathione.

Probiotics Probiotic bacteria can restore the intestinal micro biome.

Melatonin This is helpful for sleep issues common with Lyme disease patients.

Ideally, one who has a tick borne disease should seek a practitioner who has had proper training with ILADS or Lyme Disease Association Guidelines. Additionally, it's imperative to ensure that the body receives the nutrients it needs, avoiding processed foods and sugar, which can sabotage efforts to regain health. Be sure to include plenty of the following in the diet:

Vitamin A Good sources of vitamin A include sweet potato, carrots, kale, butternut squash, dried parsley, red leaf lettuce, and green leaf lettuce.

Vitamin C Good sources of vitamin C include red and green peppers, guavas, yellow peppers, fresh parsley, and kiwi fruit.

Lyme Disease Dos & Don'ts

Do cover as much of your body as possible when spending time outdoors especially in wooded areas.

Do check yourself for ticks when you return home after being outdoors.

Do remember to check your scalp for ticks in addition to your body.

Do try to remove both the mouth and the body when a tick has attached to the skin

Do use a natural tick repellent and try to avoid a neurotoxin called DEET.

Don't forget that Lyme disease is called the “great imitator” as it can mimic a variety of other health conditions.

Don't eat processed foods that have little nutritional value and often contain harmful chemicals. Look for foods high in the nutrients your body needs to fight infection including magnesium and vitamin C.

Don't wait until a blood test is positive before seeking a Lyme-literate medical doctor if you have an engorged tick on your body, which has been attached longer than 15 minutes.

Don't listen to physicians who insist that you cannot get tick borne disease unless the tick is engorged and attached for more than 24 hours.

Don't eat foods that are inflammatory in nature, especially highly processed and genetically modified foods.

Don't rely on one set of blood tests when you know Lyme disease may be a culprit. Many patients after being treated with antibiotics will now test positive for Lyme disease as their immune system starts to work and they can now make detectable antibodies.

Lifestyle Tips

Minimize Exposures to Toxic Metals

Avoid eating fish that are high in mercury content such as tilefish, tuna, and swordfish. One should ideally eat wild salmon as a major source of fish consumption.

Never allow your food to touch aluminum foil to avoid exposure to this toxic metal. Additionally, avoid using aluminum cookware and baking sheets.

There are now a variety of aluminum-free underarm deodorants that are worth investigating as an additional way to avoid the build-up of toxins in the body.

Reducing your heavy metal exposures will reduce inflammatory cytokines, thereby helping with any inflammatory condition. Lyme

disease, as well as many other conditions, are all worsened markedly when inflammation is present in the body.

Common Myths

Myth: In cases of Lyme disease, there is always a target-like rash involved.

Reality: Only around 20% to 40% of Lyme disease cases present with a “bull’s eye” rash.

Myth: Lyme disease can only come from being bitten by a tick.

Reality: Mosquitos, spiders, lice, and mites can also transmit Lyme disease.

Myth: The best way to remove a tick from the skin is to burn it off.

Reality: The CDC recommends the tick be grasped with tweezers as close as possible to the skin, then pulling upward without twisting. The site of the bite needs to be cleaned afterwards. Another great way to remove a tick is to try to suffocate the tick with Vaseline. The tick will usually back out of its attached point allowing for safer and easier removal.

Myth: Lyme disease is not contagious.

Reality: Recent research indicates that Lyme disease may be sexually transmitted.

Myth: Only prescription drugs are effective in treating Lyme disease.

Reality: Many herbal formulations are helpful, but usually prescription antibiotics are needed for a least one month and many times longer for chronic Lyme infection.

Myth: Lyme disease is usually diagnosed with a simple blood test.

Reality: A positive blood test is helpful, but a negative test may be falsely negative due to multiple factors including immune dysfunction.

Myth: Tick borne disease can only be transmitted with the vector being a deer.

Reality: Mice, birds, squirrels, and other rodents can also be vectors for tick hosts.

Supplement Recommendations

Vitamin A

Vitamin B Complex

Vitamin C

Vitamin D

Melatonin

Refrigerated Probiotics

Magnesium

Methyl Folate

N-Acetyl Cysteine

Transfer Factor

Alpha Lipoic Acid

Carnitine

Coq10

Artemisia

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