Introduction

Lyme disease is a complex tick-borne infection with the spirochete *Borrelia burgdorferi* that can affect every organ system in the body (Rubel 2006). Lyme disease is challenging to diagnose due to low sensitivity of diagnostic tests and the variable clinical presentation, often resembling a number of other conditions, including rheumatoid arthritis, Alzheimer’s disease, hepatitis, multiple sclerosis, CFIDS, and a variety of neuropsychiatric disorders (Rubel 2006). Hallmark symptoms, for example, observable tick bite and bullseye rash – *erythema migrans* (EM), occur in less than 50% of infected individuals (Stricker et al 2005, Stricker 2006). The disease profile is complicated by potential vector borne co-infections including *Bartonellosis*, *Babesiosis*, and *Ehrlichiosis*.

Antibiotics are not always effective in eliminating the infection. As an example, one study demonstrated 74.2% of 97 patients with Lyme disease, who were still symptomatic after being treated for three weeks to two months with oral or intravenous antibiotics, had a positive urine polymerase chain reaction (PCR) test (Bayer et al 1996). Treatment failure occurred in 32/165 of patients with three months of antibiotics and of those who relapsed 40% were seropositive for Lyme (Oksi et al 1999). These studies also demonstrate that ongoing symptoms after antibiotic treatment may or may not correlate with serologic persistence. To many, it is unclear if post-treatment symptoms are reflective of persistent infection or post-infection syndrome, which is common after many infections, including viral infections for example, mononucleosis. Confusion about treatment, treatment failure, and persistent symptoms lead many individuals who are infected with Lyme disease, or who suspect they are, to seek alternative medical care.

This case is of a client who had been treated for Lyme disease for one year by a medical doctor at the clinic where the author works. The client was referred for an herbal consultation after a setback and symptom flare in February 2007.

Visit 1: March, 2007

Identification (ID): FA is a 56-year old Caucasian female, married with two grown children, a school teacher on medical leave of absence.

Chief Complaint (CC): Unresolved Lyme disease with *Babesia* co-infection

History of Present Illness (HPI): FA had a history of painful menses, digestive problems, dysphonia, decreased sense of smell and taste, and panic attacks. She had achy legs for 4-5 years that continued through menopause in 2004. Two years ago, in March of 2005, her health changed. She had a sudden onset of jaw pain, accompanied by increasing severity of leg and arm pain with numbness and tingling, and a gradual increase in insomnia, night sweats, headaches, severe fatigue, shortness of breath, difficulty swallowing, and blurred vision. An MRI showed lesions “possibly consistent with Multiple Sclerosis,” but lumbar puncture in 10/05 was negative for MS. FA sought an evaluation for Lyme disease due to a lack of clear diagnosis from medical professionals.

FA was diagnosed with Lyme disease, Neuroborreliosis with *Babesia* co-infection, with no known tick bite or rash. She had a strong Jarisch-Herxheimer (herx) reaction to a modified Marshall

CASE HISTORY:

Lyme Disease

Rebecca Snow, MS, CNS, RH (AHG)
Protocol consisting of low dose Minocycline 50 mg qod and an angiotensin receptor blocker (ARB), Benicar 5 mg bid. This was discontinued one month later due to sleep difficulties and severity of pain flares. FA was transitioned to a Babesia protocol of Zithromax 500 mg qod and Mepron 750 mg/5 cc, 1 tsp bid, with no clear clinical response. In 4/06 FA responded to Samento, a tetracyclic oxindole alkaloid (TOA) free cat’s claw, *Uncaria tomentosa* product that is ambiguously labeled, and noticed an improvement in eye pain, swallowing, sense of smell, as well as a decreased tongue coating, and a slight change in her voice quality. In 6/06 she was transitioned to a new Babesia protocol of Alinia 500 mg bid and Zithromax 250 mg bid 3 x weekly, which decreased her jaw pain, headaches, and eye pain. In 11/06 she was given intravenous vitamin C, which brought mixed results, with higher doses of C causing acute flares. Symptom flares throughout her treatment included panic attacks, “jumping out of her skin”, disequilibrium, vibration in legs, jerky and clumsy hands, diarrhea, and insomnia. Acupuncture helped her cope with many of these symptoms. She was given drop dose Tenax, *Dipsacus sylvestris* fresh plant extract, but did not notice a response. She restarted Benicar in 1/07 with no initial response. In late February 2007 the Alinia, Zithromax and Benicar were discontinued.

It is noted that various supplement recommendations were made throughout treatment, but FA was non-adherent; these recommendations included Boswellia Complex (proprietary), Artemisinin (proprietary), Liver Protect (proprietary), Adrenal Essence (proprietary), vitamin D, vitamin E, B12 sublingual, probiotics, and quercitin.

**Social History:**

**Work:** Currently on a medical leave of absence from work.

**Diet:** Plentiful fruits and vegetables and limited processed foods, some meals with a high glycemic load. No artificial sweeteners. Limited good quality fats; coffee on occasion.

**Tobacco and Alcohol:** She does not smoke and rarely uses EtOH.

**Exercise:** Light activity only, due to her illness.
Slept: Variable, wants improved sleep

Medications and Supplements: Evista raloxifene HCl 60 mg, Buffered Vitamin C 1.5 g bid, Fish Oil 1.2 g bid.

Review of Symptoms (ROS): As of 3/07 still experiencing eye pain, jaw pain, headaches, fatigue, leg and arm pain, numbness and tingling, some disequilibrium, diaphoresis, chills, spastic dysphonia, some dysphagia, difficult word retrieval and some confusion. Symptoms are aggravated by dry heat but damp heat feels good. She also experiences anxiety, fear, and heart palpitations.

Physical Observations: 5’4” 118 lbs; ectomorphic body type, tongue scarlet red with reticulation; pulse shaky, thin, irregular.

10/05 ANA positive (antinuclear antibody, an indicator of tendency to autoimmune disease) ELISA negative (Enzyme-Linked Immuno- Sorbent Assay) Lyme test, the ELISA is measuring total number of Borrelia-specific antibodies in the serum yet has a lower specificity and sensitivity than the Western Immunoblot.

3/06 CD57 11; CD57 is a particular glycoprotein marker found on the cell surface of certain aggressive natural killer cells. Ideal levels are > 200, but there is a standard deviation of up to ± 30%. It is not a diagnostic test, but a potential marker of active infection (Savely, 2006).

Western Immunoblot IgG negative IgM positive by CDC (Center of Disease Control) standards, Optimal Health Physicians uses Igenex Laboratory for the Western blot test. This lab reads the results manually rather than with a computer. Igenex considers a test positive when 2 Borrelia-specific antibodies are present, unlike the CDC who requires more specific bands for a positive test.

Assessment: Antibiotics triggered a herx response, an endotoxin release from the dying organisms, the severity of which suggested a high bacterial load and/or a heightened systemic response to endotoxin load. Her recent setback may be attributed to immune dysregulation and inflammation not addressed by the antibiotic protocol alone. The positive ANA suggests an autoimmune process and so ongoing symptoms should also be addressed immunologically. MRI lesions and symptoms picture suggest neurological damage and demyelination. From the author’s experience the redness of tongue often correlates to active infection, and the reticulation may suggest collagen damage.


1. Garlic, Allium sativum extract, 20 mg allicin per capsule, 2 in a.m., 2 at lunch, 1 in p.m.
2. Sweet Annie, Artemisia annua extract, 200 mg of artemisinin per capsule, 1 capsule tid with meals
3. Fish Oil, 1 softgel tid with meals, (1.2 g Omega 3 fatty acids per softgel)
4. Probiotics, 2 capsules in a.m.
5. Xymogen’s “Liver Protect,” 1 capsule in p.m.
6. Al F³ (proprietary), 1 cap tid, each 500 mg capsule contains “Mucuna birdwoodiana,stem, Sargentodoxa cuneata stem, and Paederiae scandens Var. tormentosa stem.”
8. Increase healthy fats in diet.
**Customized Tincture**

5.7 ml Danshen, *Salvia miltiorrhiza* 1:3
2 ml Ginkgo, *Ginkgo biloba*, *Centella asiatica* 1:2
0.3 ml Ginger, *Zingiber officinale* 1:2

Dose: 3 ml bid

**Discussion:** *A. sativum* is an antispirochetal and arguably the most potent herbal antibacterial in the materia medica. In Lyme disease, it is useful for the primary *Borrelia* infection as well as bacterial co-infections. The first clinical trial using alliin (active constituent from the bulb) for patients with *Borrelia* infection, completed but as yet unpublished, reports improved quality of life and reduced symptoms (Walton 2007). Allium has other potential benefits for the patient with Lyme disease including increasing body temperature, blood perfusion, improving cardiovascular functioning (Blumenthal 2003, Mille & Bone 2000), modulating several pro-inflammatory cytokines (Spelman et al 2006), and breaking down the fibrin coating that *Borrelia* organisms use to evade immune recognition (Horowitz 2006, Coyle et al 1993).

*Babesia* is a distant cousin to the infectious agent malaria (*Plasmodium* spp.), both protozoa that infect red blood cells. Artemisinin is the World Health Organization’s first-line treatment in malaria; it is metabolized by the body to dihydroartemisinin (DHA) and may have a direct lethal effect on these organisms (Zhang 2007, Schaller 2006, Chen, 2004). The author has found artemisinin to be a valuable remedy for Babesiosis. (Note: Since this case, the author pulses the dose of artemisinin, 4 days on, 4 days off, due to the artemisinin’s ability to upregulate its own metabolism (Gordi et al 2002).)

Omega 3 fatty acids are intended as immune modulators and nutrient building blocks of neural white matter. The liver support blend combines Alpha Lipoic Acid, a broad-spectrum anti-oxidant, and Silymarin for liver regeneration.

AI #3 and Circulation P are proprietary formulas created and utilized by Dr. Qing Cai Zhang, author of *Lyme Disease and Modern Chinese Medicine*, who has treated over 1,000 clients with Lyme disease. The author chose to use these formulas based on Dr. Zhang’s success, rather than a pharmacological or traditional understanding of the herbs involved. The proposed mechanism of action of the two supplements combined, is a modulation of antibody production and immune reactivity, and improved blood rheology (Zhang 2006).

The rationale for the customized formula was to support the client’s extracellular matrix with *Centella* a modulator of fibroblast activity, improve circulation with *Zingiber* and nourish the blood, modify angiotensin, and modify matrix metalloproteinase’s with *Salvia* m. (*Jin et al 2006, Zhang & Wang 2006, Kang et al 2003, Kang et al 2002, Ouayyad et al 2001, Wang et al 1991*). This protocol stems from the theory that angiotensin II is an...
immunomodulator (Dandona et al 2007, Marshall et al 2006), and empirical evidence demonstrates that medical protocols for Lyme including ARBs improve patient outcomes (Fishman 2007, Mozayeni 2007). In addition, *S. miltiorrhiza* has become the most commonly used herbal medicine for stroke victims in China, improving quality of life and helping to repair neurological functioning (Adams et al 2006).

**April 2007**

FA had a worsening of all her symptoms. She reduced her dosing to 1-2 capsules of each supplement.

**New Customized Tincture**

- 4 ml American ginseng, *Panax quinquifolius* 1:3
- 2 ml Marshmallow, *Althaea officinalis* 1:2
- 1 ml Hawthorne berry, *Crataegus* spp. 6:1
- 1.5 ml *C. asiatica* 1:2
- 3 ml Chinese skullcap, *Scutellaria baicalensis* 1:2
- 2 ml Dong Quai, *Angelica sinensis* 1:2
- 1.5 ml Sarsaparilla, *Smilax glabra* 1:2

Dose: 7.5 ml bid

**Discussion:** The worsening of symptoms was likely a *herx* reaction. She is tolerating lower doses. We altered her tincture to account for her reactivity. Since she could not tolerate the Benicar previously, we substituted the *S. miltiorrhiza* with a combination of *Crataegus*, *Scutellaria* and *Angelica*, a gentler combination for improving blood rheology and modifying angiotensin. We also added the *P. quinquifolius* as an adaptogen to improve response to immunological stressors, *Althaea* to cool and moisten the formula, and *Smilax* to decrease endotoxins and decrease her *herx* reaction to improve her tolerance of the herbal protocol.

**July 2007**

Over the preceding months, FA came to the office monthly. We monitored gradual improvement. She continued to take all the supplements at a lower dose 1-2 x daily. Her tongue became less scarlet, more pink. She felt like she was functioning better, less light sensitivity, more exercise, less ache and pressure in eyes, less napping during the day, but still had trouble with jerkiness, pain, breathlessness, numbness and tingling, stiffness, still has...
night sweats, worsening of headaches to 4/5 level of pain with blurry vision, overly heat sensitive, had several acute episodes of severe headache, feels like glass breaking in her head, can’t speak, room goes dark.

**Assessment and Plan:** FA has made improvement over the past few months, although she is having significant neurological symptoms. *Borrelia* spp. can cross the blood brain barrier and infect neural tissue, an immunoprivileged site. She agreed to see a neurologist as was recommended three to four months ago. She had hit a plateau. We waited to change protocol until after her appointment with the neurologist, yet added more neurological support.

1. Innate’s vitamin E with tocotrienols 200 iu, 1 daily
2. Xymogen’s “Memorall” (Contains per 2 capsules: B6 as P5P 10 mg, B12 200 mcg, Folate 400 mcg, N-acetyl cysteine 200 mg, Acetyl L-Carnitine 500 mg, standardized extract of *Bacopa monniera* 100 mg, standardized extract of *Ginkgo biloba* 120 mg, Vinpocetine 10 mg, Resveratrol 2000 mcg, Huperzine A 200 mcg, Phosphatidyl Serine 100 mg) 1 daily

**August 2007**

FA saw a neurologist who confirmed the clinical diagnosis of Lyme disease based on previous laboratory tests and symptom presentation and diagnosed her with transient ischemic attacks (TIA); and prescribed a PIC line (Percutaneous Intravenous Catheter) of Rocephin. She was sick for five days. She could not move her neck, with spasm and “agony”. Her neurologist considered it an allergic reaction to the medication. At this time, we compared symptoms on 8/07 to symptoms on first visit to our clinic 18 months ago. Many symptoms were better including, digestive health, leg pain, and numbness in extremities, muscle weakness, muscle aches and pains, neuralgia. However, FA had hit a plateau and several symptoms had not yet changed or had gotten worse, including memory, spastic dysesthesia, breathlessness, sweats, heat intolerance, and fatigue.

**Assessment and Plan:** FA is still reactive to conventional treatments for Lyme disease. Need to maintain neurological support, while addressing her underlying issues (i.e. potential lingering infection, immune modulation, cardiovascular support) with some changes to her protocol. I had her discontinue the Circulation P and AI #3 and liver support, while staying on the artemisinin, vitamin E, Memorall, probiotics, and fish oil. We started pulsing the artemisinin (4 days on, 4 days off). We substituted an extract of *Houttuynia cordata* 1 capsule bid for the Alliums. Each capsule contains 90 mg decanoyl acetaldehyde. Houttuynia has been used to treat leptospiriosis (another spirochetal disorder) in China at doses of 15-30 grams daily, and has shown bactericidal activity against cystic and spirochetal forms in vitro (Zhang & Zhang 2006, Chen 2004).

Other changes include adding *Ginkgo biloba* to her formula for improved tissue perfusion. *Berberis aquifolium* (Oregon grape root) was used by the Eclectics in syphilis, another spirochetal disease. In the words of Felter, “*B. aquifolium has won its reputation chiefly as a remedy for the syphilitic taint. The more chronic the conditions or results of the disease, the more it has been praised*” (Felter 1922, p 244). *S. miltiorrhiza* was added back now that we had built up her tolerance. Lastly, we added phosphatidyl choline to her repertoire of neurological support 900 mg capsule, bid.
New Tincture
3 ml S. baicalensis 1:2
1 ml C. asiatica 1:2
2 ml S. miltiorrhiza 1:3
4 ml S. miltiorrhiza 1:3
3 ml G. biloba 2:1
2 ml C. asiatica 1:2
4 ml S. miltiorrhiza 1:3
3 ml B. aquifolium 1:3
2 ml G. biloba 2:1
Dose: 7.5 ml bid

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October 2007
Three to four weeks before this last visit, the client tested negative to both the IgG and IgM Western Blot, as well as negative to both Babesia and Bartonella henselae antibody tests. She stated that she felt great with improved energy, so she stopped everything. Some symptoms were still lingering, like the spastic dysphonia. She requested herbs to reduce heat sensitivity and vaginal dryness. She wants to stay on the supportive nutritionals. Although FA was much improved at the time of this last contact, there is a potential for relapse. We will keep communication open to support her on her healing journey.
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