Designing and Implementing a Novel CAM Protocol Using Laboratory Analysis and Supplementation to Reduce Morbidity Outcomes in the Treatment of Lyme Disease

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Introduction/Justification:
Lyme Disease (LD) is currently the most common vector-borne disease in the United States. This disease is complicated to diagnose and cure in its acute state and highly morbid in its chronic state. Given the complications derived from the presence of this pathogen, the varying antigenic response in its host and the difficulty to establish a timely diagnosis in at least half of the cases, we decided to focus our research on:
a) Designing a new Diagnostic Protocol that will help with faster identification of the spirochete
b) Creating a Novel CAM Protocol to implement laboratory analysis and supplementation to reduce morbidity outcomes in the treatment of Lyme Disease.

Justification for More Comprehensive Testing:

Concurrent tick-borne infections statistically decrease the likelihood of the characteristic bull’s eye rash and impairs diagnosis through conventional laboratory testing. Additionally, tick-borne infections increase severity and duration of morbidity and mortality. Lyme disease is also a great mimic of many chronic diseases including autoimmune and degenerative diseases, justifying the need for establishing a patient health baseline.

Basic Laboratory Testing:

Borrelia burgdorferi Ab ELISA with reflex to IgG & IgM Western blot: early disease to isolate antigenic response to Lyme 6 weeks post tick bite (its reliability is controversial), false positive with other spirochetal disease, autoimmune disease, EBV, and periodontitis. CBC with differential: abnormal WBCs, chronic anemia, hemolytic anemia

- Comprehensive Metabolic Panel: imbalanced electrolyte levels, metabolic acidosis, elevated liver enzymes, BUN, uric acid, and creatinine

Step One Comprehensive /Baseline Testing and Possible Findings

- Autoimmune Panel: increased morbidity if positive, easier follow up in chronic state
- HLADR2, HLADR4 genotypes: increased morbidity if positive
- Borrelia burgdorferi C6 Peptide Ab ELISA with reflex to IgG & IgM Western blot: more specific assay
- Babesia microti, Anaplasma phagocytophilum, and Bartonella henselae Ab IgG & IgM by IFA: positive if co-infections are present
- Viral Panel: to rule out other causes of symptoms
- 3-OH Vitamin D3: low
- Thyroid Panel (TSH, TT4, FT4, Anti-TPO Ab, Anti-TG Ab): elevated TSH, maybe low TT4 and FT4, positive for antibodies
- CBC: to rule out other causes of symptoms
- Increased clotting factors
- Muscle/joint aches
- Skin complications

Step Two Comprehensive /Baseline Testing and Possible Findings

- Fastiging Chemo, Insulin, HBA1c, diabetic state, especially after pregnancy, insulin resistance
- Urinary Organic Acids and Amino Acids: elevated amino acids indicate a state of catabolic breakdown from disease, certain elevations in organic acids correlate with physiological malfunctions or infections
- Fibrogen: increased clotting factors
- Anti-cardiolipin Ab, Anti-phospholipid Ab: positive if Borrelia burrows into the arterial lining
- C3a and C4a (Lab Corp): elevated in Lyme and autoimmune disease

Treatment therapies: (usually prescribed in this order)

- Oral: amoxicillin, azithromycin, cefuroxime, clarithromycin, doxycycline and tetracycline
- Intravenous: amoxicillin, cefuroxime or cefdinir combined with a macrolide (azithromycin)

Anti-microbials:

- Olive leaf, colodial silver, EGGC, Samento and Burdadol to decrease biofilm formation
- L-A Complex (for Borrelia), A-BAR for Babesia, A-BART (for Bartonella)

Inflammatory Cytokine Reduction:

- Samento, Cat’s Claw, Curcumin, Boswellia, Quercetin, Glucans, AstraGalan, Bransfield

Iron Overload:

- Liver enzymes, BUN, uric acid, and creatinine
- Fibrinogen:
- Coffee, tea, alcohol, soda, junk food, fast food
- Metalloenzymes
- Niacin
- C-reactive protein, homocysteine
- Infections
- IL-6

Conclusion:

After our thorough literary search we were able to design a protocol for comprehensive testing and consequent individualization of Lyme (and co-infection) treatments. Our preliminary data demonstrates that integrating antibiotic and CAM therapies help decrease the symptomatology and may prevent the chronic state of the disease by improving the immune system. We look forward to implementing our lab test protocol as a standard for our clinic patients. We predict a reduction in chronic Lyme morbidity and more clarification on what pathology might be present through better diagnostics and a combinatorial approach to treatment using CAM and antibiotics.