

LYME DISEASE + PARASITE CONNECTION

Understanding the Hidden Parasitic Component in Tick-Borne and Chronic Infectious Disease

FOR PATIENTS WITH CHRONIC LYME, CO-INFECTIONS, AND UNEXPLAINED SYMPTOMS

This guide is for educational purposes only and does not constitute medical advice. Always consult a qualified healthcare provider before beginning any protocol. Lyme disease and parasitic infections require professional medical oversight.

THE OVERLOOKED CONNECTION: WHY LYME AND PARASITES MATTER

Lyme disease (caused by *Borrelia burgdorferi* and related species) is increasingly recognized as a complex, multi-system infection that often involves co-infections and immune dysregulation. What is rarely discussed in conventional Lyme literature is the significant overlap between tick-borne infections and parasitic organisms. Addressing parasites can be a critical missing piece in Lyme recovery.

Why This Connection Matters:

- *Borrelia* and parasites share similar immune evasion strategies, including biofilm formation, antigenic variation, and immune suppression.
- Parasites can harbor and transmit *Borrelia* and other tick-borne pathogens (*Babesia*, *Bartonella*, *Ehrlichia*).
- Parasitic infection suppresses Th1 immune response, which is essential for clearing intracellular pathogens like *Borrelia*.
- Both Lyme and parasites produce neurotoxins that contribute to brain fog, mood disorders, and neurological symptoms.
- Parasites alter gut microbiome and increase intestinal permeability, allowing *Borrelia* and toxins to enter bloodstream.
- Lyme treatment (antibiotics) often disrupts gut flora, creating ideal conditions for parasitic overgrowth.
- Many "Lyme" symptoms that persist after antibiotic treatment may actually be driven by undiagnosed parasitic infection.

PARASITES AS LYME VECTORS AND CO-FACTORS

Research has identified several mechanisms by which parasites interact with tick-borne pathogens.

Direct Vector Relationships:

- Ticks themselves can carry multiple parasites, including *Babesia microti* (a protozoan parasite), *Theileria*, and filarial worms.
- *Babesia* is technically a malaria-like parasite, not a bacterium, and requires antiparasitic (not antibiotic) treatment.
- Some nematodes (roundworms) have been shown to harbor and transmit *Borrelia*-like organisms.
- Fleas, lice, and mites (common parasites in humans) can also carry *Rickettsia* and *Bartonella* species.

Immune Modulation by Parasites:

- Parasites induce Th2 immune dominance and regulatory T-cell expansion, which suppresses the Th1 response needed to fight intracellular bacteria.
- Chronic parasitic infection leads to immune exhaustion, making it harder to mount effective responses against Lyme and co-infections.
- Parasites secrete compounds that directly inhibit macrophage and neutrophil function. These are key immune cells for *Borrelia* clearance.
- Eosinophilia (elevated eosinophils) from parasitic infection can mask or complicate Lyme-related inflammation patterns.

SYMPTOM OVERLAP: DIFFERENTIATING LYME FROM PARASITES

Many Lyme patients experience symptoms that are actually driven or exacerbated by parasitic infection. Distinguishing these can guide more effective treatment.

Symptoms More Suggestive of PARASITES:

- Digestive symptoms: chronic bloating, diarrhea, constipation, or alternating patterns.
- Visible worms or eggs in stool, or itching around anus (especially at night).
- Grinding teeth at night (bruxism).
- Symptoms that worsen around full moon (parasite reproductive cycle).
- Unexplained weight loss or difficulty maintaining weight despite adequate intake.
- Food cravings, especially for sugar or starchy foods.
- Chronic sinus congestion or post-nasal drip.
- History of travel to endemic areas, camping, or exposure to contaminated water/food.

Symptoms More Suggestive of LYME / BABESIA:

- Bull's-eye rash (erythema migrans) or expanding red rash after tick bite.
- Air hunger or feeling unable to take a deep breath (*Babesia* hallmark).
- Night sweats and temperature dysregulation.
- Migrating joint pain that shifts from one joint to another.

- Facial paralysis (Bell's palsy) or other cranial nerve issues.
- Heart palpitations or Lyme carditis symptoms.
- Known tick bite or exposure to tick-endemic areas.

Symptoms Suggesting BOTH:

- Severe, unrelenting fatigue that doesn't improve with rest.
 - Brain fog, memory loss, and difficulty concentrating.
 - Muscle and joint pain, often migratory.
 - Sleep disturbances and insomnia.
 - Mood changes: anxiety, depression, irritability, or emotional lability.
 - Headaches, including migraines.
 - Neuropathy: tingling, numbness, or burning sensations.
 - Sound, light, or chemical sensitivities.
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TESTING: WHAT TO REQUEST

Standard Lyme testing (ELISA and Western Blot) misses many cases. Adding parasitic testing provides a more complete picture.

Lyme & Tick-Borne Testing:

- IGeneX or ArminLabs: More sensitive Borrelia testing including species-specific bands.
- Babesia microti and duncani antibodies and PCR.
- Bartonella henselae and quintana antibodies and PCR.
- Ehrlichia and Anaplasma testing.
- CD57 count: Low levels (less than 60) suggest chronic Lyme immune suppression.
- C3a and C4a complement levels: Elevated in Lyme and mold-related illness.

Parasitic Testing:

- Comprehensive Stool Analysis (3-day collection with PCR): Detects ova, cysts, and DNA of parasites.
 - GI-MAP: Quantitative DNA analysis for parasites, bacteria, and Candida.
 - Blood smear for Babesia and other blood-borne parasites.
 - Serology for Toxoplasma gondii, Strongyloides, and other tissue parasites.
 - Eosinophil count on CBC: Elevated levels strongly suggest parasitic infection.
 - Great Plains Mycotoxins: If mold is a co-factor (common in Lyme patients).
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INTEGRATED TREATMENT PROTOCOL

This protocol addresses both Lyme/tick-borne pathogens and parasitic infection simultaneously. It is designed to be used UNDER THE SUPERVISION of a Lyme-literate practitioner.

Work with a Lyme-literate medical doctor (LLMD), naturopathic doctor, or functional medicine practitioner. This protocol is not a substitute for professional medical care.

PHASE 1: IMMUNE FOUNDATION & DETOX PREPARATION (Weeks 1-4)

Goal: Support immune function, open detox pathways, and reduce inflammation before antimicrobials.

Diet: Anti-inflammatory, low-sugar, gluten-free, dairy-free. Focus on organic vegetables, quality proteins, and healthy fats. Eliminate alcohol, caffeine, and processed foods.

Core Supplements:

- Liposomal Glutathione: 500mg daily. Master antioxidant, critical for Lyme toxin processing.
- N-Acetyl Cysteine (NAC): 1200mg daily. Glutathione precursor and biofilm disruptor.
- Alpha-Lipoic Acid: 300-600mg daily. Antioxidant and heavy metal chelator.
- Vitamin C (Liposomal): 1000-2000mg daily. Immune support and antioxidant.
- Vitamin D3 + K2: 10,000 IU D3 daily. Immune modulation (check levels first).
- Magnesium (Glycinate or Malate): 400-800mg daily. Muscle function, sleep, and detox.
- Milk Thistle: 300-600mg daily. Liver support.
- Binders (Activated Charcoal, Bentonite Clay, or Chlorella): Daily, away from meals and supplements.

PHASE 2: ANTIMICROBIAL THERAPY (Weeks 5-16)

Goal: Target *Borrelia*, *Babesia*, *Bartonella*, and parasites simultaneously using a combination of pharmaceuticals, herbs, and natural agents.

Anti-Borrelia Agents (Herbal):

- Japanese Knotweed (Resveratrol): 500-1000mg daily. Anti-inflammatory, biofilm disruption, antimicrobial.
- Cat's Claw (*Uncaria tomentosa*): 500-1000mg daily. Immune modulation and antimicrobial.
- Andrographis: 400-600mg daily. Potent antimicrobial against *Borrelia*.
- Cryptolepis: 300-600mg daily. Traditional African herb with *Borrelia* activity.
- Teasel Root: 500-1000mg daily. Traditional Lyme herb, supports lymphatic drainage.

Anti-Babesia Agents (Parasitic Protozoan):

- Artemisinin (from *Artemisia annua*): 200-400mg daily. Potent antiparasitic against *Babesia*.
- Artemether or Artesunate: Prescription antimalarials effective against *Babesia* (requires MD).
- Atovaquone + Azithromycin: Standard prescription protocol for *Babesia* (requires MD).

- Olive Leaf Extract: 500-1000mg daily. Broad-spectrum antimicrobial.
- Cryptolepis: 300-600mg daily. Also effective against Babesia.

Anti-Parasitic Agents (Intestinal and Systemic):

- Wormwood (*Artemisia annua*): 300-600mg daily. Broad-spectrum antiparasitic.
- Black Walnut Hull: 500-1000mg daily. Juglone-containing antiparasitic.
- Pumpkin Seed Extract: 500-1000mg daily. Paralyzes intestinal parasites.
- Papaya Seed Powder: 1 teaspoon daily. Carpaine against worms and amoebas.
- Diatomaceous Earth (Food Grade): 1 tablespoon daily. Mechanical removal.
- Neem Leaf Extract: 500-1000mg daily. Broad-spectrum antiparasitic.
- Clove Oil (Eugenol): 200-400mg daily. Targets parasite eggs and biofilms.
- Ivermectin or Albendazole: Prescription antiparasitics for confirmed helminth infections (requires MD).

Biofilm Disruptors (Critical for Both Lyme and Parasites):

- Interfase Plus (Klaire Labs): 2 caps twice daily. Enzyme blend for biofilm disruption.
- Lactoferrin: 300-600mg daily. Iron chelation disrupts biofilm nutrition.
- EDTA: 500mg daily. Chelates minerals in biofilm matrix.
- Monolaurin: 600-1200mg daily. Disrupts lipid membranes in biofilms.
- Garlic Extract (Allicin): 600-1200mg daily. Quorum sensing inhibitor.

PHASE 3: GUT REPAIR & IMMUNE REBUILDING (Weeks 17-24+)

Goal: Heal intestinal lining, restore microbiome, and support long-term immune resilience.

- L-Glutamine: 5-10g daily. Gut barrier repair.
- Zinc Carnosine: 75-150mg daily. Mucosal healing.
- Butyrate: 1-2g daily. Colonocyte fuel and anti-inflammatory.
- Colostrum or Bovine Immunoglobulins: 2-4g daily. Immune support.
- Spore-Based Probiotics: 2-4 billion CFU. Survive antimicrobial therapy.
- *Saccharomyces boulardii*: 250-500mg daily. Beneficial yeast for gut competition.
- Prebiotic Fiber: 5-10g daily. Feed beneficial bacteria.
- Low-Dose Naltrexone (LDN): 1.5-4.5mg nightly. Immune modulation (requires prescription).
- Transfer Factors (Targeted): Immune education molecules that support pathogen recognition.

MANAGING HERXHEIMER REACTIONS IN LYME + PARASITE TREATMENT

Lyme Herxheimer reactions are notorious for their severity. Adding parasitic die-off can intensify these. Management is critical.

Herxheimer Management Protocol:

- Pulse dosing: Take antimicrobials for 3-4 days, then rest 2-3 days. This allows the body to process toxins between active treatment periods.
- Start with the LOWEST effective dose and increase by 25% every 3-5 days as tolerated.
- Aggressive binder use: Activated charcoal (1-2g, 3x daily), bentonite clay (1-2 tsp daily), chlorella (3-5g daily). Always take 1-2 hours away from other supplements and medications.
- Liposomal Glutathione: 500-1000mg daily. The most important supplement for toxin processing during Lyme treatment.
- Epsom salt baths: 2-3 cups in warm water, 20-30 minutes, daily during active Herxheimer.
- Infrared sauna: 15-20 minutes, 3-4x weekly (start with 10 minutes if sensitive).
- Coffee enemas: 1-2x weekly to stimulate glutathione-S-transferase and liver detox.
- Lymphatic drainage massage or dry brushing: Daily to mobilize toxins.
- Hydration: 3-4 liters of filtered water with trace minerals daily.
- Sleep: 8-10 hours nightly. The lymphatic system clears neurotoxins during deep sleep.

If Herxheimer becomes severe (high fever, vomiting, extreme weakness, confusion), STOP all antimicrobials immediately and contact your healthcare provider. Consider IV glutathione or ozone therapy for severe cases.

SPECIAL CONSIDERATIONS FOR LYME + PARASITE PATIENTS

- Mold Toxicity: Many Lyme patients also have mold-related illness (CIRS). Mold and parasites both thrive in damp environments and suppress immune function. Test for mycotoxins and address mold exposure.
 - Mast Cell Activation Syndrome (MCAS): Common in Lyme patients. Parasitic die-off can trigger histamine release. Use quercetin (500-1000mg daily), DAO enzymes, and low-histamine diet during treatment.
 - MTHFR and Methylation Issues: Many Lyme patients have methylation defects. Support with methylated B vitamins, TMG, or SAMe to improve toxin processing and neurotransmitter function.
 - Heavy Metal Burden: Parasites and Lyme both impair detoxification. Consider heavy metal testing (hair mineral analysis, provoked urine test) and gentle chelation if indicated.
 - Hormonal Imbalances: Chronic infection disrupts HPA axis, thyroid, and sex hormones. Test and support cortisol, thyroid (TSH, free T3, free T4, reverse T3), and sex hormones.
 - Pregnancy: Do NOT use wormwood, high-dose artemisinin, or many herbal antimicrobials during pregnancy. Work with a qualified practitioner for safe alternatives.
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LONG-TERM OUTLOOK & RECURRENCE PREVENTION

Lyme disease is often described as "chronic" or "persistent," but many patients achieve significant remission with comprehensive, individualized treatment. Addressing parasites is frequently the missing piece that shifts the trajectory from chronic illness to recovery.

Keys to Long-Term Success:

- Continue low-dose maintenance antimicrobials or herbs for 6-12 months after symptom resolution.
- Quarterly parasite "maintenance" protocols (1 week of antiparasitic herbs every 3 months).
- Annual comprehensive testing: Lyme panels, stool analysis, OAT, and inflammatory markers.
- Maintain anti-inflammatory diet and avoid sugar, alcohol, and processed foods.
- Optimize sleep, stress management, and exercise for immune resilience.
- Protect against tick bites: Permethrin-treated clothing, tick checks, and prompt removal.
- Support methylation, detoxification, and mitochondrial function ongoing.
- Consider peptide therapies (BPC-157, LL-37, Thymosin Alpha-1) for tissue repair and immune modulation under practitioner guidance.

The Lyme + Parasite connection is one of the most underexplored areas in chronic infectious disease. For patients who have tried everything and still struggle, addressing parasitic infection may be the breakthrough they have been seeking. Work with a knowledgeable practitioner, be patient with the process, and trust that healing is possible.

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