

Lyme Disease

- The #1 Infectious disease in the U.S.
- 200,000 new cases reported annually
- Underreported by as much as 10 fold
- 98 known symptoms of Lyme
- A victim may have 6-40 symptoms all that same time
- Why antibiotic therapy fails
- Any infected biting insect can carry Lyme disease

Lyme Disease

SPECTRUM OF SIGNS & SYMPTOMS

Abdominal pain
Acne
Acrodermatitis
Addison's Disease
ADHD
Allergies
Alzheimer's Disease
Amyotrophic lateral sclerosis (ALS)
Anger, explosive
Anorexia
Anxiety
Arrhythmia
Arthralgias (joint pain)
Arthritis
Ataxia
Atrioventricular Block
Attention Deficit Disorder (ADD)
Autism
Autoimmune disorder
Autonomic Dysfunction
B6 responsive anemia
Bell's Palsy
Bipolar
Blurry vision
Brain Fog
Burning pain
Buzzing in the head
Cardiomyopathy
Change in brain waves
Change in hearing/buzzing/tinnitus
Changes in taste and smell
Chest pain
Chills and fever
Chronic EBV
Chronic Fatigue Syndrome
Cognitive Dysfunction
Cold hands, cold feet
Concentration difficulties
Constipation
Continual and recurring infections
Cough
Cranial Polyneuritis
Demyelinating Disorders (MS)
Depression
Encephalitis and encephalomyelitis
Encephalopathy
Erythema
Facial paralysis
Fatigue
Fibromyalgia
G.I. distress/abdominal pain
G.I. Upset
Hair loss
Headache
Heart palpitations
History of an insect bite
Hypoglycemia, Insulin Resistance
Insomnia, or sleep deprivation
Irritable Bowel Syndrome
Joint pain
Joint pain, swelling
Joint stiffness
Joint swelling
Light sensitivity (photophobia)
Light, Sound, Odor Intolerance
Lightheadedness
Loss of muscle tone
Loss of temperature control
Low exercise tolerance
Lupus
Lymph gland swelling
Memory loss
Meningitides
Menopause
Menstrual dysfunction
Migraine headaches
Mood swings
Multiple Chemical Sensitivity
Multiple Sclerosis
Muscle pain
Muscle pain or cramps
Muscle weakness
Myopericarditis
Nail spots (leukodinia)
Nausea/vomiting
Neuropathic pain
Numbness and tingling
Obsessive-Compulsive symptoms
Pale Skin, China Doll look
Panic attacks
Paranoia
Parkinson's Disease

Parkinson's Disease
Pelvic pain
Peripheral neuropathy
Polymyalgia rheumatica
Progressive Visual Deterioration
Radiculoneuropathies
Rash
Reflex sympathetic dystrophy
Reflex Sympathetic Syndrome
Restless Leg
Reversible Dementia
Rheumatoid Arthritis
Scleroderma
Shortness of breath
Sleep disturbance
Sleeping Disorder
Sore throat
Speech difficulties
Stress intolerance
Stretch marks
Substance abuse
Swallowing difficulty
Swollen Glands
Syphilis.
Thyroid Disease
Tinnitus
Tremor
Trigeminal neuralgia
Visual disturbance
Word-finding problems

Lyme Disease is often misdiagnosed as:

Alzheimer's Disease
Irritable Bowel Syndrome
Multiple Sclerosis
Parkinson's Disease
ALS
ADD
ADHD
Hyperkinetic Syndrome
Obsessive Compulsive Disorder
Fibromyalgia
Chronic Fatigue Syndrome
Chronic Pain
Schizophrenia
Autoimmune Diseases
Anxiety/Depression
Insomnia
Degenerative Disc Disease
Insomnia, Sleep Deprivation
GERD
Lupus
Vertigo/Migraines

Patricia Kane, PhD

Dietrich Klinghardt, MD, PhD Science and
Steven Harris, MD - A Lyme patient may
experience 6-40 of these listed symptoms at a
time.

The History of Lyme Disease

Lyme disease was first recognized in the United States in 1975, following a mysterious outbreak of juvenile rheumatoid arthritis near the community of Lyme, Connecticut. The rural location of the Lyme outbreak and the onset of illness during summer and early fall suggested that the transmission of the disease was by an arthropod vector. In 1982, the etiologic agent of Lyme disease was discovered by Willy Burgdorfer.

Burgdorfer isolated spirochetes belonging to the genus *Borrelia* from the mid-guts of Nodules ticks. He showed that these spirochetes reacted with immune serum from patients that had been diagnosed with Lyme disease. Consequently, the Lyme spirochete resembling the syphilis spirochete was given the name *Borrelia burgdorferi* (*Bb*).

Methods of Lyme Disease Transmission

W.T. Harvey, M.D., M.S., M.P.H., and Patricia Salvato, M.D., of Diversified Medical Practices in Houston, Texas, were puzzled by the high number of patients testing positive for Lyme disease. Many of these patients presented with "established" criteria for Lyme disease, but others did not. The fact that southeastern Texas is a 'non-endemic' region, and that many of the patients had no history of erythema migrans rash, led the doctors to question established methods for Lyme disease consideration.

Careful reflection of published research lead them to conclude the following. First, the arthropod is not the exclusive vector of Lyme disease. In addition to ticks, *Bb* may be carried and transmitted by fleas, mosquitos, and mites. Second, Lyme disease is not exclusively vector-borne. Compelling evidence supports horizontal (sexual) and vertical (congenital) humanto-human transfer. Other front-line physicians are

arriving at the same conclusions. "Of the more than 5,000 children I've treated, 240 have been

born with the disease," says Charles Ray Jones, M.D. Dr. Jones, who is the world's leading pediatric specialist on Lyme disease, says that about 90% of his practice is comprised of patients with the disease. He also states, "Twelve children who've been breast-fed have subsequently developed Lyme." University of Wisconsin researchers state that dairy cattle and other food animals can be infected with *B. burgdorferi* and hence some raw foods of animal origin might be contaminated with the pathogen.

Recent findings indicate that the pathogen may be transmitted orally to laboratory animals, without an arthropod vector. Thus, the possibility exists that Lyme disease can be a food infection. Citing limitations of laboratory tests for the detection of antibodies to *Bb*, a study was conducted in 1995 at the University of Vienna (Austria) for its detection. Utilizing polymerase chain reaction testing for DNA, *Bb* was found to be present in both the urine and breast milk of patients previously diagnosed with Lyme disease.

A study conducted at the Sacramento (California) Medical Foundation Blood Center in 1989 concluded that there is evidence that the transmission of *Bb* is possible by blood transfusion. Furthermore, in 1990, a study by the Centers for Disease Control (CDC) in Atlanta, Georgia stated that the data demonstrates that *Bb* can survive the blood processing procedures normally applied to transfused blood in the USA.

Number of Cases

Lyme disease is the fastest-growing epidemic in the world. The Center for Disease Control (CDC) in Atlanta, Georgia, U.S.A. affirms that "there is considerable under-reporting" of Lyme disease, maintaining that the actual infection rate may be 1.8 million, 10 times higher than the 180,000 cases currently reported. Nick Harris, Ph.D., Director of the International Lyme and Associated Diseases Society (ILADS), states "Lyme is grossly under-reported. In the U.S. we probably have about 200,000 cases per year." Dan Kinderleher, M.D., an expert on Lyme disease, stated on the Today Show on June 10, 2002 that the number of cases may be 100 times higher (18 million in the United States alone) than reported by the CDC.

Jo Anne Whitaker, M.D., has developed a "Rapid Identification of *Borrelia burgdorferi*" and has over 2900 positive specimens for *Bb* from forty-six (46) states, including Alaska and Hawaii. In addition, Dr. Whitaker has had positive specimens from Canada, Brazil, Denmark, Scotland, The Netherlands, Ireland, England, France, Spain, Germany, Switzerland, and the Canary Islands. Considering vector, congenital and sexual transfer, Dr. Harvey and Dr. Salvato estimate that 15.5% of the global population, nearly 1 billion people, could be infected with *Bb*. Lee Cowden, M.D., states that there are very few symptoms where one should not consider Lyme, especially given that a quarter of the U.S. population may be affected. It is estimated that Lyme disease may be a contributing factor in more than 50% of chronically ill people.

Lyme Disease: The Unknown Epidemic

Joseph Mercola, D.O.

Part 1

Antibiotic Treatment

Every authority the authors spoke with considered antibiotics the primary treatment for Lyme, but that the accepted "standard" antibiotic therapies (of a duration and type acceptable to insurance carriers, HMOs, mainstream physicians, etc.) are insufficient.

Lyme is sometimes classified as having different stages -- early vs. chronic, or localized vs. disseminated. "The biggest distinction is between early-stage and chronic," says Dr. Whitaker. "In the beginning, many organ systems are invaded while the patient may experience no symptoms."

As time goes on we see multiple system symptoms involving the whole body, especially the central and peripheral nervous systems, and the musculoskeletal, skin and circulatory systems. Many Lyme cases are diagnosed by psychiatrists. Dr. Brian Fallon is studying cognitive and other neuropsychiatric manifestations."

The problem, says Dr. Barkley, is that "There isn't an adequate treatment model. So if the physician says you have Lyme, and gives you the standard antibiotic therapy, and you aren't better, the thinking is that you must have something else wrong, such as an autoimmune problem, or else you didn't have Lyme disease in the first place.

Short-term oral antibiotics are effective in treating localized Lyme, but with disseminated Lyme, the requirement for either intravenously administered antibiotics or long-term oral antibiotics becomes common."

In his regular practice, Dr. Bock has always tried to avoid antibiotics. But, he says, "If you go back to syphilis, **the history of spirochetes is one of being able to hide out and then reappear, causing severe, devastating neurological illness.** This isn't a risk I would recommend taking with Bb."

Most of the physicians recommended an immediate short course of antibiotics for anyone bitten by a deer tick, or who exhibits certain symptoms. "It takes a while for the immune system to produce antibodies," says Dr. Barkley.

"So Lyme testing -- other than by a skin biopsy from an active rash within 14 days following the bite -- may yield inconclusive results. Symptoms of Lyme include fever, night sweats, fatigue or a flu-like illness that does not improve within three to five days." Other symptoms reported by physicians include stiff neck, prolonged joint and muscle pain, heart palpitations, brain fog or severe headaches.

"I tally all the initial symptoms and signs, and try to weed them out one by one," says Dr. Jones. However, he cautions, "Treatment duration varies with each individual. If one stops antibiotics prematurely, a more resilient Bb infection will develop that will cause more brain and body injury."

Adjunct Therapies

None of these physicians relied solely on antibiotics; they used

immune system-strengthening protocols as well.

"The immune system may be less able to respond if the person is having a hard time clearing toxins," says Dr. Bock.

"You're going to add to this overload by taking antibiotics. For general immune support, we've used maitake and reishi mushrooms, ginseng and astragalus.

"Natural medicine approaches include anti-inflammatory eicosanoids such as fish oil and borage seed oil; high-potency multivitamin and mineral formulas; CoQ10 and other mitochondrial nutrients; cognitive enhancement substances such as carnitine and certain herbal extracts.

Acupuncture combined with physical therapy can often reduce pain. I have posted an article online that discusses these alternative approaches in more depth.

Dr. Cowden recited a litany of natural immunotherapy agents. His

recommendations include the following:

"Transfer factor -- ImmuneFactor 2 and CellResponse are good products; Thymic Protein A; medicinal mushroom combinations such as ImmPower AHCC; glyconutrients like Ambrotose; arabinogalactan (Larix), an immune-enhancing polysaccharide; and Astragalus Supreme."

Dr. Cowden also notes that "if you use a pharmaceutical antibiotic, you need to use an herbal antifungal to reduce stress on the liver and kidneys."

Lifestyle Changes

"**Avoid sugars because they feed these bugs,**" advises Dr. Cowden. "it is most important to balance saliva pH between

6.7 and 7.0. Sufficient dietary minerals bring pH up if low. Reducing stress will raise pH; so will identifying and removing food, nutrient and inhalant allergies. You should identify your nutritional type and then follow the appropriate diet.

Grapefruit seed extract and certain other substances, including vitamin C, can interfere with tissue uptake of the antibiotics, and make them less effective. Take as few non-essential supplements as possible -- consult with a physician knowledgeable about nutrition -- and time them as far from the antibiotic as possible."

Dr. Bock reminds us that, "It's also important to support the endocrine system. In some cases, cognitive abilities improved when subclinical hypothyroid problems were treated. Chronic stress can cause suppression of the immune system. Manage the effects of stress on the body.

In his practice, Dr. Jones has found that, "Taking acidophilus and other probiotics is always important. [Antibiotics kill the intestinal flora necessary for digestion and immune functions; probiotics like lactobacillus re-inoculate the intestines.] Stay away from or severely limit alcohol intake. Develop a healthier standard of living. Rest is needed. We've found that a parent who has a child with Lyme is often feeling guilty. One has to work with these difficult feelings. I emphasize that it's not a parent's fault; you can't protect your child from Lyme exposure."

Present Limitations

None of the experts the authors consulted claimed to completely understand Lyme or to be able to completely cure it in

every case. Some people infected with Bb may never manifest the symptoms of Lyme.

Others become seriously ill soon after they are infected. Treatment must be customized from patient to patient and can vary widely. "Certain people may clear Lyme without antibiotic therapy," says Dr. Barkley. "However, the other extreme is that even with antibiotics, some people with Lyme have died from this disease."

Says Dr. Jones, "We have seen children from one day old to 18 years of age who have required from three months to six years of antibiotic therapy. We have had some patients on antibiotic therapy for very long periods, and we've done follow-ups for as long as 15 years post-treatment.

The criterion for stopping therapy is that one must be totally Lyme disease-symptom free for two months, with no Lyme flare induced by another infection or menses and no 'Herx' [Jarisch-Herxheimer reaction of the body manifesting symptoms in response to dying Bb]."

"There are very few symptoms where you shouldn't consider Lyme," says Dr. Cowden. **"more than 50% of chronically ill people may have Lyme contributing to their condition."**

The situation is quite difficult now. "It's sad where we are with this disease," says Dr. Cowden. "You're supposed to go through the 'standard' treatment first before turning to alternative treatments. We need to turn this around, into a logical, integrated approach."

The impetus for this change must come not only from the patients who have been classically infected by a tick bite, but by those

who suffer from "unexplained" muscle and joint pain, unrelieved fatigue and cognitive impairment -- and by those who are afflicted with degenerative diseases that can be caused or aggravated by Lyme.

Presently, such patients will find few doctors experienced in Lyme, because of the newness of the disease and lack of understanding about it -- and because **those doctors who take a comprehensive approach to diagnosing and treating Lyme are commonly harassed by state medical boards, insurance companies and HMOs.**

It is up to patients to actually educate their doctors about the inadequacy of standard testing and the necessity for using techniques such as **electrodermal screening and darkfield microscopy.** And it is up to patients to become politically involved with Lyme advocacy groups, such as those listed here, to fight for their right to proper medical care.

The earlier Lyme is diagnosed, the easier it is to cure. For people with chronic Lyme symptoms, the road to recovery can be long. With comprehensive integrative treatment, however -- a combination of the best of conventional and alternative medicine protocols -- their health can be continually and dramatically improved.

Lyme Disease: The Unknown Epidemic

D.J.Fletcher and Tom Klaber

Part 2

Millions of people who are diagnosed with multiple sclerosis, fibromyalgia, Alzheimer's, chronic fatigue syndrome and other degenerative disease could have Lyme Disease causing or contributing to their condition.

Forget just about everything you think you know about Lyme Disease

It is not a rare disease, it is epidemic. It is not just tick-borne, it can be transmitted by other insects, including fleas, mosquitoes, mites, spiders, deer flies, horse flies, spiders, and by human-to-human contact.

The characteristic bull's eye rash is found only in a minority of cases. Lyme disease is rarely cured by a simple course of antibiotics. Finally, Lyme disease is not just a disease that makes you "tired and achy"--it can utterly destroy a person's life and ultimately be fatal.

Lyme disease, in fact, might be the most insidious--and least understood--infectious disease of our day. **"If it weren't for AIDS,"** says Nick Harris, PhD, President of IgeneX, Inc., a research and testing laboratory in Palo Alto, California, **"Lyme would be the number one infectious disease in the United States and Western Europe.**

Lyme disease was first recognized in the United States in 1975, after a mysterious outbreak of arthritis near Lyme, Connecticut. It wasn't until 1982 that the spirochete that causes Lyme disease was identified. It was subsequently named *Borrelia burgdorferi* (Bb), in honor of Willy Burgdorfer, PhD., a pioneer researcher.

Many now see the disease, also called Lyme borreliosis, as more than a simple infection, but rather as a complex illness that can consist of other co-infections, especially of the parasitic pathogens *Babesia*, *Bartonella* and *Ehrlichia*. There may be co-infections with various viral infections such as Epstein Barr Virus and Cytomegalovirus.

Animal studies have shown that in less than a week after being infected, the Lyme spirochete can be deeply embedded inside tendons, muscles, tissue, the heart and the brain.

"Of the more than 5,000 children I have treated, 240 have been born with the disease," says Dr. Jones, who specializes in Pediatric and Adolescent Medicine.

"Twelve children who have been breast-fed have subsequently developed Lyme disease.

Bb can be transmitted transplacentally, even with in vitro fertilization. I have seen eight children infected in this way. People from

Asia who come to me with the classic Lyme rash have been infected by fleas and gnats."

Gregory Bach, D.O., presented a study on transmission via semen at the American Psychiatric Association meeting in November, 2000. He confirmed Bb DNA in semen using the PCR test (Polymerase Chain Reaction).

Dr. Bach calls Bb "a brother" to the syphilis spirochete because of their genetic similarities. For that reason, when he treats a Lyme patient in a relationship, he often treats the spouse. Otherwise, he says, they can just pass the Bb back and forth, re-infecting each other.

Dr. Tang adds other avenues of infection. "Transmission may also occur via blood transfusion, and through the bite of mosquitoes or other insects." Dr. Cowden contends that unpasteurized goat or cow milk can infect a person with Bb.

Unreliable Testing

What is the reason for the discrepancy between the government's statistics and the experience of front-line physicians? Says Dr. Jones, "The CDC criteria was developed only for surveillance, it was never meant for diagnosis.

Lyme disease is a clinical diagnosis. The test evidence may be used to support a clinical diagnosis, but it doesn't prove one has Lyme disease. About 50% of patients have been seronegative (blood test negative) for

Lyme disease but meet all of the clinical criteria."

Most of the standard tests used to detect Lyme disease are notoriously unreliable. Explains Dr. Harris, "The initial thing patients usually get is a Western Blot antibody test. This test is not positive immediately after Bb exposure and is only 60% to 70% of people ever show antibodies to Bb."

Dr. Cowden favors two tests developed respectively by Dr. Whitaker and Lida Mattman, PhD/. Director of the Nelson Medical Research Institute in Warren, Michigan. However both of these tests have yet to win FDA approval for diagnostic use.

Explains Dr. Whitaker, "We have developed the Rapid Identification of Bb (RIBb) test. A highly purified fluorescent antibody stain-specific for Bb. It is used to detect the organism. The test provides results in 20 to 30 minutes, key to getting the right treatment started early.

Dr. Mattman's culture test also uses a fluorescent antibody staining technique which allows her to study live cultures under a fluorescent microscope. "When a person is sick," says Dr. Mattman, "antibodies get tied up in the tissues, in what is called, an immune complex, and are not detected in the patient's blood plasma."

So it's not that the antibody isn't there or hasn't produced, it just isn't detectable. Thus, the tests which are based on detecting antibodies give false negatives. "The tests

of Drs. Whitaker and Mattman do not look for antibodies but look for the organism, in the same way that tuberculosis is diagnosed. When Dr. Jones treats a Lyme patient who's in a relationship, he often treats the spouse as well, otherwise he says, they can just pass the Bb back and forth, re-infecting each other.

There are several reasons why Lyme is so difficult to test for--and difficult to treat. Take for instance, the bull's-eye rash--called Erythema migrans--that is supposed to appear after being bitten by a tick carrying the Lyme spirochete. Every doctor with whom the authors spoke said that this rash appears in only 39% to 40% of infected people. Dr. Jones said that fewer than 10% of the infected children he sees exhibit the rash.

Dietrich Klinghardt, M.D., PhD states that the dark field microscope is the most accurate for the diagnosis of Lyme Disease.

A Master of Elusiveness

The Lyme spirochete can disseminate throughout the body remarkably rapid.

The mobile form of the bacteria can contract like a large muscle and twist to propel itself forward because of this spring-like action. It can actually swim better in tissue than in blood.

It can travel through blood vessel walls and through connective tissue. Animal studies have shown that in less than a week after being infected, the Lyme spirochete can be deeply embedded inside tendons, muscle, the heart and the brain. It invades tissue,

replicates and destroys its host cell as it emerges. Sometimes the cell wall collapses around the spirochete, forming a biofilm layer, allowing it to evade detection by many tests and by the body's immune system.

The Lyme spirochete (Bb) is pleomorphic, meaning that it can radically change form. It can go from the mobile form to a cyst form. In the cyst form it can evade the immune system and antibiotics. Not only can the spirochete change from the classic spiral mobile form into the round cyst form, but can change back again into the spiral mobile form.

The main reason that Lyme is so resistant to detection and therapy is that it can radically change from the mobile form to the cyst form. According to Dr. Cowden, the Bb is very pleomorphic you can't expect any one antibiotic to be effective. Bacteria share genetic material with one another, so the offspring of the next bug can have a new genetic sequence that can resist the antibiotic.

Clinical Diagnosis

All of the doctors interviewed had their own testing preferences, but each insisted that Lyme was a clinical diagnosis, only supported by testing and retesting

Dr. Tang uses all of the traditional blood tests, history and symptoms, but he also analyzes the blood using darkfield microscopy. He also urges caution **that not spotting the spirochete in the mobile form**

or the cyst form doesn't mean that the patient does not have Lyme disease.

Dr. Cowden also employs muscle testing and electrodermal screening. Dr. Burrascano has developed a weighted list of diagnostic criteria and an exhaustive symptom checklist.

Pediatric Screening

Dr. Jones says "we ask about sudden, sometimes subtle, changes in behavior or cognitive function, such as losing skills or losing the ability to learn new material, not wanting to play or go outside, running fever; being sensitive to light or noise. Dr. Klinghardt states that 25% of the cases autism have Lyme disease.

If one has joint phenomena, we know that an inflammatory or infectious process is present. A hall mark of Lyme disease is fatigue unrelieved by rest.

For women, Dr. Barkley has found that testing around the time of menses increases the probability of discovering the presence of Bb. "Women with Lyme have an exacerbation of their symptoms around menses. The decline of both estrogen and progesterone at the end of the menstrual cycle is associated with the worsening of the patient's Lyme symptoms.

In most cases, effective alternative/complementary treatments require much more doctor time per patient and often include a broad range of medicines and supplements consumed over

a much longer period of time, costing much more money than the current standard of care accepted by medical insurers.

Treatment may also include intravenous therapy (I.V.).

Mercola.com
July 25, 2001

Lyme Disease Spirochete Defeats Antibiotics

The Infectious Diseases Society of America (IDSA) asserts that *Borrelia burgdorferi* (the Lyme disease spirochete) readily succumbs to antibiotic treatment. Microbiologists who have studied the organism disagree. The spirochete survives assaults from drugs and the immune system by hiding in biofilms and by changing form (from the mobile form to the cyst form and back to the mobile form when the threat is gone.)

Norwegian researchers Oystein Brorson and Sverre-Henning Brorson say: "*B. burgdorferi* has the ability to convert (and reconvert) to cystic forms both *in vivo* and *in vitro*" when exposed to the antibiotics ceftriaxone, doxycyclin, ciprofloxacin, and vancomycin. When the environment is safe for growth, the bacteria returns to its mobile form.

Recent studies involving the use of the new antibiotic tigecycline show the difficulty of finding a treatment for *Borrelia* (the Lyme disease spirochete). *In vitro* laboratory tests found that tigecycline inhibited and destroyed the cyst and the mobile of the spirochete. Unfortunately, *in vitro* research does not always match the results of *in vivo* research.

Researchers at University of California-Davis tested this antibiotic on mice with different stages of *Borrelia* infection (1 week, 3 weeks, or 4 months) in a controlled study. Three months after treatment, infection status was evaluated by culture, quantitative OspA (outer surface protein A) real-time polymerase chain reaction (PCR), and subcutaneous transplantation of joint and heart tissue into other mice.

Not surprisingly, tissue from the saline-treated control mice were culture- and PCR-positive for *Borrelia*. Some tissues from the antibiotic-treated mice were also PCR-positive, although the DNA markers were greatly reduced compared to controls. Antibiotic treatment at the 1-week stage appeared to be more effective than treatment that began at the later stages.

All of the antibiotic-treated mice were culture-negative. Even though the spirochetes could not be cultured, mice that received transplants from the antibiotic-treated mice developed spirochetal DNA in multiple tissues. Moreover ticks that fed on the antibiotic-treated mice acquired *Borrelia* and were able to transmit the infection to other mice.

Clearly, negative cultures do not mean that *Borrelia* is absent. The researchers conclude: "...antibiotic treatment [with tigecycline] is unable to clear persisting spirochetes, which remain viable and infectious, but are non-dividing or slowly dividing."

Unfortunately, tigecycline is not the only failure. The UC-Davis-researchers state: "Treatment failures have been documented with nearly every type of antimicrobial drug based upon clinical relapse, culture, or PCR." Studies such as this one support the view that the IDSA's treatment guidelines are inadequate. They also show how challenging this infection.

Townsend Letter July 10, 2010

Antibiotic Therapy and Lyme Disease

Antibiotics do not reach all deep, sequestered areas of infections. Antibiotics are delivered either orally or intravenously via blood. Blood cannot deliver antibiotics to all parts of the body in sufficient concentrations to kill some bacteria and spirochetes.

There are two reasons:

1. Some parts of the body, such as joints and cartilage, received minimal blood flow in comparison with other blood-rich parts of the body. Spirochetal infections such as Lyme Disease colonies can become established in these areas.
2. The brain is protected from foreign antibiotic chemicals carried in the blood. The blood-brain barrier which ensures that most foreign substances stay out of the brain, even if they are allowed to circulate to other parts of the body. Most oral antibiotics only reach the brain in one-tenth the concentration they reach other parts of the body. Lyme Disease can infect the brain.

Antibiotics and other treatments delivered via blood are also hindered in reaching the infection because of various blood problems often occurring in Lyme Disease. Many Lyme Disease patients have excessive inflammation, hypercoagulation, increased presence of fibrogen, poor circulation and other blood related problems. These problems compound the difficulty of getting the drugs or herbs where they are needed. Experts theorize that the Lyme Disease bacteria intentionally create excess inflammation to prevent proper immunological function and blood flow.

Bacteria, particularly *Borrelia Bergerdorfi*, can mutate out of the susceptibility to the antibiotic and secondly, the antibiotic can not reach the infection in sufficient quantities needed to deactivate the bacteria.

Antibiotics are toxic when used in high doses, long term.

The next problem with antibiotics is damage to the body. Extended use of antibiotics leads to myriad health problems and side effects. Most side effects found on the label of an antibiotic were determined based on minimal treatment duration such as 10 to 30 days.

Antibiotics can cause serious *Candida* overgrowth as well as other imbalances that eventually weaken the entire immune system.

The IV antibiotic Rocephin often causes biliary sludge that can precipitate gall bladder attacks, indigestion and ultimately the necessity of gall bladder surgery.

Antibiotics are immunosuppressive. From the suppression of symptoms, the immunosuppressive effects of antibiotics hindering the body from recovering.

Treatment Consideration for Infection:

At the Department of Medicine, Karl Franzens University, Graz, Austria show that antibiotics applied to the Lyme Disease organism in a test tube were 16 times more effective if the temperature in the test tub was raised from 96.8 to 110.4 degrees F. It also showed that all spirochetes would die in the test tube even without antibiotics present if the temperature was raised to between 106 and 108 degrees F.

Getting Rid of Biofilm and the Critters it Protects

Biofilm is thought by some LLMD's to be one of those "snags" to healing Lyme disease. Sometimes bacteria, spirochetes and other microbes cloak themselves in biofilm, a polysaccharide matrix comprised of minerals, metals and other elements, to protect themselves from anti-microbial treatments, which prevents antibiotics and other Lyme strategies from being **fully** effective.

When biofilm exists in the gut, it also disturbs digestion and prevents normal **flora** (like acidophilus) from thriving. *If you* have persistent dysbiosis, mysterious gut pain, or a borrelia infection (Lyme Disease) that simply isn't responding to treatments, consider the possibility that biofilm may be impeding the healing progress.

Unfortunately, medicine is still in its infancy when it comes to understanding biofilm and its role in Lyme disease. It is even less equipped to offer effective treatments that will break the biofilm so that microbes can be accessed and eliminated.

Combining enzymes with heavy metal chelators (since the biofilm is comprised in part, of metals), and taking these on an empty stomach, is thought to be one potentially effective strategy for "punching holes" in the biofilm and thereby breaking down the bugs' protective polysaccharide blankies. Once this is done, then the Lyme sufferer can take anti-microbials to attack bacteria, yeast and other bugs. Subsequently, toxin binders can be ingested to clean up the mess left behind by the dead critters.

Tentatively, some of the enzymatic products that are currently being used *for* the hole-punching process include:

- Trypsin and chymotrypsin, systemic proteolytic enzymes that will digest the biofilm when taken away from food. (Macrozyme, Wobenzyme, etc).
- Lumbrokinase, when there is dysbiosis
- Serapeptase, also used with hypercoagulation.
- EDTA a heavy metal chelator

Gut biofilm toxin binders, according to Dr. A. Derksen, a Lyme-literate N.D., include: fiber, clays, zeolites, chlorella, modifilan, apple pectin, butyrate, bentonite and activated charcoal.

Sunday, October 12, 2008

Lyme Disease *Borrelia* Survive by Shape-Shifting

"The premise for prolonged antibiotic therapy for Lyme disease is the notion that some spirochetes can persist despite conventional treatment courses. ... Not only is this assertion microbiologically implausible, there are no convincing published scientific data that support the existence of chronic Lyme disease," states Donald M. Poretz, MD, president of Infectious Diseases Society of America (ISDA).

Willy Burgdorfer, PhD, formerly of the National Institutes of Health, disagrees. Burgdorfer first discovered Lyme-causing spirochetes (spiral-shaped bacteria), dubbed *Borrelia burgdorferi*, in New York ticks in 1981. At the 12th international Conference on Lyme Disease and Other Spirochetal and Tick-Borne Disorders (April 1999), Burgdorfer explained that microbiologists have studied genus *Borrelia* spirochetes for over 100 years. (Much of the research is no longer available in English.) In that time, some researchers reported that spirochetes in infected ticks and lice "disappeared" and later reappeared in another part of the vector's body. Instead of spiral-shaped organisms, observers noticed blebs (small particles) and granules that seemed to come from cysts.

As a result, some biologists hypothesized a complex life cycle during which *Borrelia* bacteria change appearance. Many other researchers, including Burgdorfer himself in 1951, "found no evidence of a negative phase or complex life cycle." Then, Burgdorfer was confronted with *Borrelia burgdorferi*: "This relatively large *Borrelia* is not readily detectable in blood smears or thick drops of Lyme disease patients and susceptible host animals, yet engorgement on infected hosts results in up to 100%

infected ticks." Researchers have observed *B. burgdorferi* spirochetes "with outer membrane-associated cysts, blebs or spherules that often contain numerous granules with surrounding trilaminar membranes." The matter inside the granules has a similar appearance and electron density to typical spirochetes.

Alan MacDonald, MD, a pathologist with St. Catherine of Siena Medical Center (Smithtown, New York), has used DNA probes in his study of *B. burgdorferi*. Regardless of appearance, the various forms have the same DNA as the spirochete. MacDonald and Eva Sapi, PhD, have also discovered that ***Borrelia* spirochetes can form biofilms**. "In the biofilm unit, which is a colony of spirochetes, the spiral form is often lost and is replaced by cystic forms, granular dot forms [that contain *Borrelia* DNA], or L-forms," says MacDonald. MacDonald describes L-forms as "sort of like soap bubbles that can stretch out and contain various boundaries, and are not as easy to identify as spirochetes."

Rather than being part of a complex life cycle, *B. burgdorferi*'s **shape-shifting seems to be a "survival mechanism," an adaptation to unfavorable environmental conditions or threats**. Burgdorfer says in an experiment by Brorson and Brorson, "*B. burgdorferi* converted rapidly to cystic forms when transferred to spinal fluid. No normal spirochetes were left after 24 hours of incubation at 37°C; all were converted to cysts. When these cystic forms were transferred to a rich (BSK-H) medium, the cysts, were converted back to normal, mobile spirochetes after 1 incubation for 9 to 17 days." Antibiotics and the digestive enzymes in a vector's gut

also cause the spirochete to change form.
Given this information, is *Borrelia*'s
resistance to conventional antibiotic
treatment "microbiologically implausible"?

Reference:

Burgdorfer W. The complexity of arthropod-borne
spirochetes (*Borrelia* spp). Presented at: The
12th International Conference on Lyme Disease
and Other Spirochetal and Tick-Borne
Disorders. April 9, 1999. Available at:
[www.cbc.ca/
ideas/features/shows/bacteria/willy.html](http://www.cbc.ca/ideas/features/shows/bacteria/willy.html).

Accessed April 7, 2009.

Lyme Disease Research Database. Alzheimer's and
Lyme disease: Are they connected? [www.lyme-
disease-research-data base, com/alan-
macdonaldtranscription.html](http://www.lyme-disease-research-database.com/alan-macdonaldtranscription.html). Accessed April 4,
2009.

Poretz DM. IDSA Lyme disease letter to U.S.
Senate. March 21, 2008. Available at:
[www.idsociety.org/WorkArea/downloadasset.as
px?id=10818](http://www.idsociety.org/WorkArea/downloadasset.aspx?id=10818). Accessed April 7, 2009.

Townsend July 2009

Lyme Disease

Lyme Disease is caused by a spirochete called *borrelia Bergerdorfi* (bBergerdorfi). It exists in multiple forms such as:

1. a mobile form
2. an L-form
3. a cyst form

It has been observed under a high resolution blood morphology microscope that the organism quite readily reverts to the cyst form within two hours of being exposed to Doxycycline and many other antibiotics. Many patients who have been "successfully treated" with antibiotics for their Lyme, but whose live blood showed massive amounts of cyst-form spirochetes even though their Western blot Lyme test came back negative. Yes, their symptoms were indeed resolved, but possibly only because most of the spirochetes were driven into the cyst form. The spirochetes in cyst form may or may not produce toxins, replicate, or invoke an immune response. The DNA of the *Borrelia Bergerdorfi* can be identified in all three forms.

Many patients with neuroborreliosis have had a genetic defect in their ability to produce glutathione most notably, a Glutathione S-Transferase deficiency. Also, several have shown impaired ability to remove biotoxins. This deficiency in detoxification may be the reason some Lyme cases have more neurological symptoms than others with seemingly comparable levels of infection.

Since antibiotics drive the spirochete to the cyst form and the antibiotics have no biological effect on the biotoxins. Alternative treatment using the following has been successful:

1. High-dose vitamin C, IV*
2. Hydrogen peroxide, IV
3. Hydrochloric Acid push
4. Ozone,
5. Photoluminescent Therapy (Ultraviolet Blood Radiation)
6. Glutathione
7. Sodium Bicarbonate

Additional home therapy includes:

8. Samento (an extract of TAO-free Cat's claw)
9. Banderol
10. Utopian Colloidal Silver
11. Echinacea Homeopathic Combination as an immunostimulator
12. Myosotis Homeopathic Combination as a lymphatic drainage agent
13. Immune System Activator
14. Lyme Nosode or *Borrelia Bergerdorfi* 10 vial series from Staufen Pharma

*Vitamin C is an extremely potent antitoxin, which makes it an ideal agent to treat infections.

Thomas Levey, MD, JD