The Role of Co-Infections in Lyme Disease

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There are several other organisms found in ticks which when transmitted alone, or in combination with Lyme disease, may account for increased severities of symptoms or persistence of illness. These organisms cause diseases which include but are not limited to: Ehrlichiosis, babesiosis, bartonellosis, Rocky Mountain spotted fever, Powassan encephalitis, Q fever, tick paralysis, anaplasmosis, and TSEs.

Ehrlichiosis can cause high fever, headache, myalgia, and flu-like symptoms. Clinical laboratory findings may include positive antibody titers for Human Monocyte Ehrlichia (HME) and Human Granulocytic Ehrlichia (HGE now called anaplasmosis) with morula in leukocytes (erythroblastoplasia colonus), and low white cell counts; low platelet counts with elevated liver functions in certain patients.

Babesiosis occurs in an intracellular parasite found in red blood cells which can cause a malaise like illness. Children may complain of intermittent fevers, chills, day and night sweats, as well as having an increased severity and duration of Lyme disease symptoms. Diagnosis is made by antibody titers (IFA), blood smear, DNA (PCR) and RNA analysis (ISH assay). Antifungal treatments include anaflouquin and azithromycin, and chloroquine and quinine.

Bartonella henselae are intracellular bacteria that can be transmitted by a cat bite or scratch or a tick bite. When present in combination with Lyme disease, atypical presentations may result including viral problems, headaches, significant lymph node enlargement, resistant neurological deficits, and the new onset of a seizure disorder. Diagnosis is made by acute and convalescent antibody titers (IHA) and by PCR (DNA analysis).

TBE, a tick-borne encephalitis, has been found to cause neurologic symptoms even in the absence of other evidence for Lyme disease. A recent study has indicated that 90% of patients who have seizures in the absence of evidence for Lyme disease have a positive Lyme antibody titer. It is important to consider the possibility of coinfection with TBE or other tick-borne agents when evaluating cases of unexplained seizures or neurologic disease.

Lyme disease can cause a variety of artifactual manifestations in children that can mimic many other rickettsial disorders. It can present with psittacosis-like arthritis, and more commonly will develop into chronic arthritis. Joint swelling frequently does not occur, but may occasionally be seen in late stages of the infection. Patients often complain of “wasting arthritis.” The most commonly involved joints are the knees, hips, neck, wrists, hands and temporomandibular joints.

It is not uncommon for a patient to have coconcurrent musculoskeletal pain. The muscle pain is most often found to be a diffuse pattern, and not localized to the classic “trigger point” locations seen in fibromyalgia. Children with Lyme disease may also experience morning stiffness, rest pain and muscle weakness. In children, the ability to participate in sports activities may be affected. Common symptoms may include headaches, irritability, memory loss, as well as dermatomyalgias and polymyositis. These symptoms may also be seen in chronic Lyme disease.

The proper evaluation of these patients should include appropriate serology for tick-borne disorders, accompanied by levels for antinuclear antibodies, rheumatoid factor, and creatinine kinase and sedimentation rate. Cross-reactive antibodies against the Lyme bacteria may mean levels of false positive autoantibodies. Appropriate antibiotic treatment should be examined. Policies that mandate a referral for Lyme disease evaluation should be re-evaluated if necessary.

Lyme Disease Association, Inc.
Funding research projects from coast to coast.

Lyme Disease Association (LDA) is a national non-profit (501c3) corporation.
It raises over $5.5 million for Lyme in late June.
It has over 95% of donors who are asked to give.
Funding two free Lyme clinics in every state.
LDA empowers people with Lyme disease.
It helps children with Lyme get a proper education.
Authorized first national medical conference focusing on Lyme disease in Children & Adolescents.
It has 51 partner organizations nationwide including affiliates, chapters, supporter groups.
Published book for 9-12 year olds with Lyme.
Established lymphedema kits for kids with no insurance.

Lyme disease children may display a multitude of medical symptoms that can make it impossible to keep up to class. Common educational problems for these students include: memory loss, fatigue, depression and the inability to organize, focus and sustain attention. All of these factors have a negative impact on their ability to perform academically. Children whose illness affects school performance may qualify for special education accommodations or services.

Students with disabilities may receive services under either the Individuals with Disabilities Education Act (IDEA) or Section 504 of the Rehabilitation Act of 1973. Both of these civil rights legislation prevent discrimination. Students qualify for 504 services if their medical condition “substantially limits” their ability to learn. Students with Lyme disease often fit into 504’s, due to their ever-drifting medical and educational conditions. Schools prescribed through college that receive federal funding must meet 504 requirements.

School district special education policies adopted by the board of education should be examined. Policies that mandate a waiting period for home instruction do not apply to long term home instruction under IDEA-Lyme Education Program, IEP. IEP’s should be written so that students with Lyme can attend school when medically able and be concurrently eligible for supplemental home tutor, or they can receive home instruction without a waiting period. An extended school year can be written into the IEP. Common school subject and subject levels that are offered is a school setting must be offered, with modifications as necessary, to a student on home instruction. The parents as an integral part of the child’s team, are involved in and operate the IDEA, and be an active participant in the process of making educational decisions for the student.

Resources
http://www.ablepractices.org
http://www.AblePractices.com
http://http://www.ldaids.org

Involvement of the Nervous System in Lyme Disease

The nervous system is frequently affected by Lyme disease. Both the central and peripheral nervous systems are affected. It is important for physicians and patients to recognize how frequently the nervous system is involved in Lyme disease.

For more information, contact: (888) 566-6611
E-mail: Lymiller@aol.com

More resources:
http://www.LymeInfo.net
http://www.LDAIDS.org
http://www.IGeneX.com
http://www.ILADS.org
http://www.IGeneX.com

Other recommended resources:

http://LymeDiseaseAssociation.org
http://www.LymeNet.org
http://www.LymeDisease.org
http://www.LymeInfo.net
http://www.IGeneX.com
http://www.ILADS.org
http://www.IGeneX.com

Drs. Douglass and Niman have written a book for kids about Lyme disease called: *Lyme Disease in Children & Adolescents*.

Lyme Disease in Children & Adolescents

Douglass, Joel M., MD, FACP, VA Medical Consultant, Pediatrics, VAMC, Columbia, SC

Finding out whether your child has Lyme disease can be difficult. You want to make sure you are getting the best possible care for your child. This book is written for children and their families who want to understand more about Lyme disease and its impact on their lives.

This book explains what Lyme disease is, how it spreads, and what you can do to help prevent your child from becoming infected. You will also learn about the symptoms and treatments for Lyme disease, as well as what to expect during the treatment process.

In addition, the book includes helpful tips for parents and caregivers on how to help their child cope with the physical and emotional challenges of Lyme disease. It provides advice on how to communicate with your child about their condition, how to support them during treatment, and how to maintain a healthy lifestyle.

This book is written in a clear, easy-to-understand language, making it accessible for children of all ages. It is also a great resource for parents and caregivers who want to learn more about Lyme disease and its impact on children.

If you or someone you know has Lyme disease, this book is a must-read. It offers valuable information and guidance on how to manage this serious condition, and how to make the best decisions for your child's health and well-being.

The book is available on Amazon or other online retailers. If you would like to purchase a copy, please visit the following link: [Lyme Disease in Children & Adolescents](http://www.amazon.com).
Lyme disease is a significant infectious disease that has become much more common lately with the concurrent human development on natural areas. Adolescents and children probably have a higher risk for this illness because they spend more time in areas where they might suffer a bite from a tick carrying the infectious spirochete (Borrelia burgdorferi). As an auto-inflammatory Lyme disease patients present with a number of ocular findings, including optic neuritis, anterior uveitis, keratitis, and uveitis in a larval form. Furthermore, these patients can seem to have central nervous defects, including herpesvirus white matter lesions of the brain and even an antecedent leading to intracranial hypertension. Because of the neurotropism of this illness, patients often present with reading difficulties such as fatigue, warping, letters running together, or double vision.

Lyme disease can mimic so many diseases, including multiple sclerosis, chronic fatigue syndrome and fibromyalgia. Therefore, a young patient’s health care team must ensure that the patient has been seen and diagnosed. Intracranial hypertension is a difficult diagnosis, particularly when it presents in an uncommon way.

If Lyme disease attacks the optic nerve, it can lead to blindness. For this reason, examining just the eyes might not reveal the severity of a child’s or adolescent’s vision problems. Neuro-ophtalmologic are particularly trained in examining the entire visual pathway.

Children with Lyme disease may develop neuropsychiatric symptoms affecting attention, thinking, and behavior. The infection itself may have direct effects on the brain or indirect effects through the activation of the immune system which produces substances that affect the brain. For example, children and adolescents may present with problems that might result in trouble paying attention or staying awake in class as well as struggles with parents about getting to school on time. Common psychiatric presentations in younger children include irritability and increased separation anxiety or other fears. In older children, mood swings and anxiety attacks are more common. Less frequently, children may develop overactive motor or vocal, obsessive compulsive disorder, or narcolepsy—a condition that looks very much like an autonomic sleep disorder.

In young children, common cognitive problems include trouble with visual and auditory attention and lower mental processing speed. Children with neuroinvasive Lyme disease may be misdiagnosed as having primary attention deficit disorder—a mistake that not only results in unnecessary school problems for the child but also may allow a treatable acute infection to become a more entrenched chronic one. For example, these children may have trouble dividing or maintaining focus on more than one task at a time or will slow in class or seem to be in a daze that he/she describes. The doctor in school performance alarms parents and may result in a medical diagnosis which almost always represents the activation and persistence of the immune system to fighting the infection even long after the illness is gone.

In addition to Lyme disease, other conditions such as Bartonella, mycoplasma, HL, pyelitis and babesia have been observed in the U.S. and Europe.