



Neuropsychiatric Manifestations of Lyme disease in Children & Teens

Introduction

More than 17 million children in the United States have or have had a diagnosable mental illness. One in 40 children has autism spectrum disorder. Are cognitive, behavioral, mood disorders or psychiatric disorders in children due to the nature of the child - a life-long neuropsychiatric disease? Or, to a treatable medical condition where the neuropsychiatric disorder would only be a symptom and not the disease?

Infections, autoimmune encephalitis like PANDAS and toxicity are among the main causes of non-psychiatric neurobehavioral and cognitive disorders in children. Many infections may cause neuropsychiatric illnesses.

Among all infections, *Borrelia burgdorferi*, the bacteria responsible for Lyme disease, became one of the most prominent bacteria at the source of neuropsychiatric and cognitive disorders in children. Lyme disease is very common in children. In fact, 25% of Lyme disease patients are less than 19 years old. The CDC previously estimated in 2015 that about 300,000 people get Lyme disease each year. The toll, today, claimed by the CDC is 476,000 new cases of Lyme disease every year. It became imperative for parents and educators to consider Lyme and tick borne diseases for any neuropsychiatric and cognitive disorders in children.

Neuropsychiatric Manifestations of Lyme Disease in Children

Recognizing the manifestations of Lyme disease in children is more difficult and the disease, often, goes underdiagnosed. The bull's eye rash is not always present. Less than 50% of children with Lyme disease remember a tick bite. Pains are frequently confused with "growing pain", fatigue with insufficient sleep or food.

According to Dr. Rosalie Greenberg, Psychiatrist, children develop more central nervous system symptoms while adults more from the peripheral nervous system. Children, for example, are more prone to cognitive and behavioral disorders than adults who tend to suffer more from numbness, tinglings or nerve pain. Headaches are the most common neurological symptom of Lyme disease

(71%) in children followed by Bell's palsy, facial paralysis, (only 14%). Neurological symptoms in children are, therefore, not that common.

In turn, the most common and yet more subtle manifestations of Lyme disease in children are emotional, cognitive and behavioral. In my practice, the most common symptom reported by mothers is by far, "My son was the happiest kid until ..."

The change of personality, sudden or progressive, is definitely the symptom #1 of Lyme disease in children. Children with Lyme disease are more prone to deficit in visual and auditory attention. They may be very intelligent with a high IQ contrasting with a very poor memory of recent events. The cognitive disorders commonly associated with tick borne diseases include difficulty with attention and concentration, speed and efficacy of processing information, learning and memory, auditory processing and language expression, planning and organization, multitasking, math and reading. Children take a much longer time to process questions and respond with delay. As the teacher keeps the same speed, children end up dragging way behind and may appear to have ADD.

According to Dr. Robert Bransfield, Psychiatrist, Lyme disease may be responsible for a wide spectrum of neuropsychiatric symptoms, which may include:

- developmental disorders
- autism spectrum disorders
- schizoaffective disorders
- bipolar disorder
- depression
- anxiety disorders (panic disorder, social anxiety disorder, generalized anxiety disorder, OCD)
- intrusive thoughts
- eating disorders
- sleep disorders
- addiction
- cognitive impairment
- brain fog
- seizure disorders
- Suicide
- violence
- social withdrawal
- depersonalization
- dissociative episodes
- derealization
- Other _____

Sensory hypersensitivity is not uncommon – extra sensitivity in any one or more of the five senses:

- sound
- vision

- touch
- taste
- smell

Some children cannot tolerate any clothes on their skin. Light sensitivity may intensify headaches. The depressed Lyme disease child may suffer from increased sadness but most often from emotional numbness, feeling emotionally detached.

The most common emotional manifestations of Lyme disease in children are irritability, emotional lability (emotions easily changeable), attention deficit, and decreased interest in play. 20-25% of autistic children in the US have been shown to have Lyme disease.

Neurological and/or neuropsychiatric symptoms are often the first and only sign of infection. Brian Fallon, M.D, Director of the Department of Lyme disease of Columbia University, writes "Psychiatrists who work in endemic areas need to include Lyme disease in the differential diagnosis of any atypical psychiatric disorder".

Preschoolers and Toddlers

They may have:

- trouble falling asleep
- frequent awakenings
- nightmares
- night terrors
- sleep walking
- may return to bedwetting or loss of daytime bladder control after being dry

Issues at school

At school, children with Lyme disease have

- learning disabilities.
- cognitive problems that come and go.
- they may show a loss of interest in school and school activities.
- concentration and memory problems can make math especially difficult.
- slowed thinking can impair comprehension of oral and written language.
- word, number and letter reversals in written and oral speech are common.

Children with autistic or psychiatric symptoms may talk and act normal when on antibiotics, they may:

- be too tired to attend school or to complete their work.
- have a drop in grades, especially in subjects that require to remember previously learned concepts, such as math, foreign language, and chemistry.
- do fine in history and English.
- be too tired to go to school and may need to go part-time or receive homeschooling.

The symptoms and severity of symptoms can vary from day to day. A child may feel well enough to go to school one day, but not the next.

Teenagers

They may have:

- mood swings
- depression
- suicidal thoughts
- personality changes
- sleep problems
- poor concentration
- cognitive disorder
- show a loss of interest in family values.
- be too tired to attend school or to complete their work.
- loneliness can be a problem for teenagers with Lyme disease.
- be too tired to participate in social activities with friends.
- It's hard for them to predict how they will feel from day to day, making it difficult to make social plans, which often have to be canceled.

Lyme Disease Diagnosis

The current guidelines for the diagnosis of Lyme disease require a minimum of 5 IgG bands and of 2 IgM bands to diagnose Lyme disease. Less than 5 or less than 2, the diagnosis of Lyme disease is definitely excluded even though you may have a typical presentation of Lyme disease. There is, however, a controversy over the diagnosis of Lyme disease.

The International Lyme and Associated Diseases Society (ILADS) does not require a minimum of positive bands but distinguishes the bands that are specific to Lyme disease from those that are not. There are only five bands that are specific to Lyme disease. Requiring a minimum of bands to make a diagnosis of Lyme disease poses a problem when most of the laboratories omit testing two specific bands out of five; the bands 31 and 34. More than two decades ago, the Lyme disease vaccine caused the bands 31 and 34 to be positive.

These two bands were consequently removed from the panel. Despite the fact that the vaccine was withdrawn from the market many years ago, the bands 31 and 34 were never reinstated. The problem with the diagnosis of Lyme disease is that there is no commonly available culture or PCR testing. Relying solely on blood tests that look for antibodies to rule out Lyme disease implies that anyone who has had contact with the Lyme bacteria is able to produce antibodies, and in a sufficient quantity to render the test positive.

It is well known that not all, who were exposed to a bacteria, a virus or a vaccine, develop antibodies. The current guidelines imply that a false negative Lyme disease blood test never happens.

Lyme disease is known to evade and to suppress the immune system, and therefore impairs the production of antibodies resulting in a high incidence of false negative test results.

The tick saliva that transmits *Borrelia burgdorferi*, the bacteria responsible for Lyme disease, may also contain many other bacteria like *Anaplasma*, *Ehrlichia*, *Bartonella*, viruses or parasites like *Babesia*. Many other strains of *Borrelia* exist like *Borrelia mayonii*, *Borrelia miyamotoi*, *Borrelia hermsii*, etc.

The standard Lyme disease blood test only checks for the *Borrelia Burgdorferi*, not for the other strains or co-infections that can all be responsible for the Lyme disease symptoms. Out of 100 of my patients who tested positive for *Bartonella*, only 20 tested positive for *Borrelia burgdorferi*.

The search of the co-infections and the choice of the laboratory are essential, but false negative test results are always possible. According to ILADS, the diagnosis of Lyme disease is primarily based on clinical signs, and the exclusion of all possible other diagnoses and supported only at best by the presence of specific bands.

A positive antibody test, however, only testifies of an immune response to the exposure of the Lyme bacteria that may have happened in the past. It does not mean that your child is suffering, today, from Lyme disease. The same way measles, mumps or rubella antibodies only testify of past exposure to the virus either from vaccine or disease and remain forever positive, this is the same with Lyme disease antibodies.

Other diseases may coexist with a positive Lyme disease blood test. This is why it is important to exclude all other medical conditions, and why expertise in clinical manifestations of tick-borne diseases and resembling diseases is crucial to make sense of a blood test result whether it be positive or negative.

If you think of Lyme disease based on your child's symptoms and the standard Lyme disease blood test comes back negative, keep in mind that controversy over Lyme disease exists that divides physicians between those who confidently will assure you that your child does not have Lyme disease based on the blood test, and those who will rather rely on their clinical judgment.

Neuropsychiatric disorders due to tick-borne diseases are treatable. A negative blood test does not rule out Lyme disease, and neuropsychiatric disorders due to Lyme disease may definitely be associated with negative blood tests. Denying Lyme disease despite a suggestive clinical presentation locks children into a psychiatric diagnosis that they will, most likely, bear for life; with medications that do not cure, but only alleviate or resolve symptoms as long as they are taken, commonly for a life-time, not without side effects, affecting the personality or the quality of life.

If you believe your child is suffering from the symptoms detailed in this article, and does not improve despite treatment(s). Please visit our website to learn about becoming a patient of my practice www.massfunctionalmid.com

Please complete the new patient questionnaire and return pages 2 - 4 of this article to our office by fax 845-623-0047 or email. Please give us 24-36 hours to reply and our office manager will contact you.

Please download the new patient packet available on our Resources page on our website. Also on this page you will find information about Lyme disease grants.

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