Introduction to Lyme and psychiatric symptoms

Welcome to another episode of the Healing Lyme Summit. I'm your host, Doctor Myriah Hinchey, and today we're going to talk about such an important topic.

We are going to discuss the link between tick borne diseases and psychiatric manifestations. And, you know, this goes way beyond being in chronic pain or having a chronic illness, leading to the feelings of depression, right, or depression because of our situation or the anxiety of not knowing when our body or our brain isn't going to show up for us, you know, at an important event or having brain fog causing anxiety.

This is really about how these infections themselves and how they manipulate the biochemistry of the body and the brain, leading to true psychiatric manifestations and here to discuss this with us tonight is Rosalie Greenberg, M. D.

she is a board certified adolescent child and adult psychiatrist, and she specializes in complex conditions resulting from tick borne disease. So, Doctor Greenberg, if you would please introduce yourself to our listeners and tell us how you became involved and specialized in how psychiatric manifestations are caused by tick borne diseases.

Well, thank you for having me. But, you know, I did my initial training at Columbia University in medical school, adult psychiatry and child psychiatry.

And it was right at the time that psychiatry was shifting from being more analytically oriented to being much more biologically oriented. So I got trained with some of the best minds in the early mind in terms of biological illness, psychiatric illness and kids.

And so that's always been my interest. And I've gone from expertise, from attention deficit disorder to, depressive disorder to pediatric bipolar disorders and just kind of following I guess, what we're seeing, you know, with our, children and adolescents with the population, and I've always been very curious.

So in the late 19, wedo from the National Institute of Mental Health started doing publishing studies in Pans or Pandas, and that stands for pediatric acute onset Neuropsychiatric syndrome.

That's Pans. And then pediatric autoimmune neuropsychiatric disorders after strep infection.

Dr. Greenbergu2019s background and early PANS/PANDAS cases

Basically, what Doctor Sweden and her colleagues found is that, you know, some people get strep infections, and afterwards there's an immunological reaction that occurs and they may have heart damage or damage of the heart, valve for other kinds of neurologic or physiologic problems.

Well, she found that in some kids, after strep infections, they develop a variety of emotional types of symptoms. Obsessive compulsive disorder, eating disorders with a lot of anxiety, depression, and a whole bunch of other symptoms.

Well, I found this fascinating. And after her first lecture, I found my first case three weeks later. So. And it was interesting because the idea is that they're autoimmune, at least Pandas, which is related to streptococcal infection, which is strep throat.

But you know, all kids get that from that. You could have the sudden onset of obsessive compulsive disorder. And so the parents will describe the child woke up the next day and they can almost, you know, tell you what happened.

They can tell you the exact day the kid woke up and it was a different person who was much more anxious, cranky,

unhappy, etc.. And so treating this has to address not just the psychiatric symptoms, but the immunologic reasons that they're occurring.

So but as I learn more about this, I said, Jake, these kids that have pans or pandas sound a lot like my bipolar kids because I had lectured about that and I've written books on that, etc.

and when I did some research, I found that a lot of the symptoms were really quite similar. The only thing that my bipolar kids didn't have is, bedwetting, which is what you can find, or urinary problems, which you can find in kids with pandas.

Okay, so I started to work up my newer patients looking for infections, and then I had one young man who he was around 11, and he had four psychiatric hospitalizations in one year.

Okay. This poor kid, he was just out of control. He looked bipolar, manic depressive. He was suicidal. He was very aggressive. And it was very hard to stabilize him with medication.

Okay. Was discharged from the hospital, came to see me, and we were okay for a while. But then it was very clear to me that he was going to need to be in residential treatment.

I couldn't get him better. So I rack my brain and said, okay, okay, what else can I do here? And I remembered, okay, check for all these infections. Well, his mother said that he never had a strep throat in his life.

Okay. His sister and brother did both. Okay, we get the blood test and his titers were very high. Okay. Normal is less than 200, and his was like 800 something.

Well, we may not have known that he had a strep, but clearly his body was reacting to a strep. And so, working with an immunologist colleague, started addressing that.

And, and then when my kid came back a few months later, I saw a completely new person. And it was something I had never seen in all my years of child psychiatry.

He comes in and Doctor Greenberg, you know what can did get all A's in school this year. And he's like grabbing his mother, leaning against Terry. So sweet and affectionate.

I'm like, what happened here? This is something I have. I have never seen any medicine do that. This was a whole new ball game. And so after that, I started on my newer patients because I was getting a lot of bipolar kids because that's what I'm known for.

I would also get these tests, and I had more infections than I would have thought. And then I heard that actually ticks carry mycoplasma. Mycoplasma is a very common childhood infection.

It's walking pneumonia, which many kids have. Okay. Ticks carry Mike. Maybe I should learn something about ticks. I never went back after that. I mean, that was it.

So what I found once I learned about the nuances of bug borne illness and tick borne testing, is that my bipolar kids, almost 100% positive for tick borne illness.

Well, okay, but we have to remember that I practice in new Jersey, which is a lime and demic area, and, you know, it has one of the highest rates in the country.

Okay. So then I went, well, I thought, you know, I've been treating kids for 15 years or more like that are bipolar. What if I went back and looked at they had tick borne disorders and I was shocked?

I have to tell you, I was shocked because most of them were positive, too. Now, the majority of these kids had no history of a tick bite and definitely not the erythema migraines, bullseye rash that you know, people talked about,

right?

But there was clearly evidence of exposure to tick borne illness. And that was the start of it all. And since I got into it, I began, well, it changed my whole view of how you approach medicine.

I, I must say I had to learn a lot more, immunology and go back to my EKGs and all these other medical tests to really understand what was going on with my kids.

I call them my kids and how to treat them. And it's very interesting. I mean, that's I remember Bob Mansfield, who was one of the pioneers in this area, tick borne illness.

You know, I had called him up and said, oh, I heard you have a listserv, and I think I want to learn about tick borne illness. And then a few months later, he said, you know, why don't you give a talk at eyelids?

I'm thinking, I just got into this, but okay. And I looked at my bipolar kids. And I was almost embarrassed to present my findings because almost everybody had evidence of exposure to a tick borne illness.

I mean, I remember because I told my girlfriend, who's a physician, I said, you know, I'm kind of embarrassed. I don't know that I can really present this because I was so surprised.

But over time, I've become much less surprised. Yeah. And it's very interesting. I mean, Lyme, when it was first written about and discovered, so to speak, in the United States, everybody was talking about Lyme arthritis in children.

How tick-borne infections affect the brain

But if one pay careful enough attention, there were a lot of other types of symptoms and a lot of psychiatric symptoms. And that was actually well documented, by, the mother who brought all the, rheumatology cases to Yale to, kick off all these studies.

So and what's become clear to me over time is that in children, I think probably one of the most common presentations is psychiatric illness. And but you can see where that would be hard to recognize because kids are a work in progress.

Okay. Everybody's kid is a genius. And to Lynn, not so I know. But they change over time. And if you get an infection that's changing them but you don't even know they have an infection.

Okay. You know, maybe we thought he was he could focus incredibly so. But maybe he really is struggling with whatever. And it makes sense if you have an illness in childhood, a kid's a work in progress.

And so anywhere they do some bumps in the road or some deviations from the natural path, it's going to affect that kid's development, how they learn social, emotionally, cognitively, and of course, affect their future.

Whether they'll go to college, what kind of job they will have, what type of relationships they will have. So this whole world of tick borne illness was really a game changer.

You know, we know that let's say half of mental illness begins by age 30 or 14. Okay. That winds up adult chronic illness and two thirds by age 24. Well, among the many things that tells us if you're going to intervene and make a difference, you've got to get there early in childhood to intervene.

And so these are crucial years. And so the more awareness we have of the factors that are impacting our kids and the earlier we can intervene, the better chance we have of, allowing them to have wonderful pictures.

Yeah, absolutely. It's crazy too, because it's like, you know, with kids, it's like they're always changing and, you know, developing and new siblings come in and circumstances change and it gets blamed on the new teacher.

And, you know, all of these other things that are happening. And so it's easy to pick out a regression, but it's not easy to pick out a change unless it's a very abrupt onset change.

And sometimes that can be a clue. But thank you so much for for sharing that story with us. That's fascinating. Fascinating. It to me was the most amazing thing I had ever seen.

Yeah, because that meant you could do something. You could really make a difference in a child's life if you catch it early. Right? Right. So you can actually help the child to heal as opposed to managing the condition literally for the rest of their life?

Absolutely, absolutely. So can you explain to our listeners, like, in your opinion, how does Lyme like how does for example, the infection of Borrelia impact the brain and manifest as neuropsychiatric symptoms?

Well, you know, Lyme is like syphilis. Syphilis was the great imitator, while Lyme is the new great imitator. And so it can cause just about any type of illness.

And that includes any type of psychiatric illness, illness and, and kids. So, you know, it can cause depression. There's studies indicating it can be associated with suicidal behavior.

You know, you have to wonder, we're having such a mental health crisis in this country. I really think that these infections play a role. And as we know with Lyme, there are co-infections.

And they also compound your clinical picture. So it makes the illnesses harder to treat and more complex because you'll have the B0, a Bartonella and a plasma.

All these things in addition to line right or instead of Lyme. And they have major effects on the child and they affect the neurotransmitters. I mean, they've checked the immune system, and we're discovering, you know, neuropsychiatric genes and our immune genes are like neighbors in DNA and they affect each other.

That is so important. I was talking to a mother today, and she was telling me her child had just started, one of the anti, antibiotics. And she said can of course, psychiatric symptoms.

And this is a young lady who has psychiatric symptoms, depression. And I said absolutely, you know, we talk about her time or reactions in adults where, someone starts the antibiotic and in the process of killing off the bugs, they get an exacerbation of their symptoms. So a hot knee, a painful knee becomes too hot, or if they have a hard time, a reaction.

Okay, well, if you have a kid with a hot temper and they have a Horkheimer, you're going to have a hotter camper. Or if they're depressed, they may suddenly become suicidal who are much more aggressive or out of control.

And that's crucial to be able to recognize, because then you have to decide how you're going to approach it. And as I said, the immune system is involved.

So some of it may be using anti-inflammatory, ibuprofen, things like that to just lower the immune response so that the child is not so out of control.

But it's going to vary. And you have to have you have to have awareness of these things because it's not you're going to you're not going to know. I mean, if the mom said to me, gee, you know, we're dropping the kids antipsychotic, so do you think that was it?

And I said, no, that was three weeks ago. I think it was okay that it's when you started this newer med three days ago, and suddenly the child is acting more strangely.

That's your reaction to the antibiotic? That's what's happening to a child. And also psychiatrically. These symptoms will be less responsive to psychiatric medication.

Just like that boy that I told you about. I mean, there was no question he was bipolar. But. And there was a family history of it. I mean, I've always been very careful about.

I believe genes really have a lot to do with who you are. So the kid was genetically loaded, but there was no question that once he was on antibiotics and the right antibiotics and for a few months, it made a dramatic difference.

Right? So that's one of the clues. My next question is actually some of these clues. So you pointed out a child or a person, right. That doesn't respond in a way that you would typically expect them to respond to a certain medication is a huge red flag.

Well, it that's something else is going on. It can be okay, look, everybody is not the same. And so we know, that the antidepressant that works in one child may not work in another.

But what you find is these kids that are very ill and they may be psychotic, they may be having breaks with reality, seeing things, hearing things and get our most powerful medicines.

Don't touch them right? All it does is make them more tired.

Recognizing neuropsychiatric clues in children

But it doesn't take away the voices or the delusions. And in my view, I always say if something is treatment resistant, then you have to think maybe you're looking at the wrong thing, right?

Okay. And maybe you're misunderstanding what is going on. And I think that's crucial because what happens is, Oh, well, this one doesn't this didn't work.

Well, maybe a little, but okay, we add another and another and the kids get tons of meds piled on. Right. And it doesn't help or it doesn't help, but no, that's that's just not the right way.

One has to really. One has to be very medically oriented and biologically oriented. And if if something doesn't respond the way it should typically respond, then why?

That's it. You can't just simply go by an algorithm, which means like, you know, a chart and go by. Oh, go to the left. Go to the right. Yeah. You have to really think about what you're seeing in front of your face.

And it's been amazing. I mean, I've had kids that go on vacation and suddenly they're obnoxious and they're ruining the whole family's vacation. And the mom will call me and I'll say, you know what?

Give them Motrin and give them a fever dose and Motrin and, you know, give it twice or three times a day for the next few days. And that can make a real difference for some because it's quelling that immune response, right?

Decreasing the inflammation. So when you are evaluating somebody, are there specific symptoms or a way like a pattern of onset with symptoms that would tip you off to think that it was Lyme disease or one of the co-infections, as opposed to a psychiatric condition.

That is more, I guess, organic, for lack of a better word. Right. But but as we know, this is all organic. Yeah. And you're right when you say it that way.

You know, I learned that I do my psychiatric history a little differently. We would always say, okay, what grade are you in? What's cool do you go to who's in your household?

Well, now I ask about the pets. How many dogs do you have? How many cats? What are their names? How they? Have they ever been bitten by a tick? Do they go on hikes with you?

Family vacations? Where have you gone? I know there was one young man that I saw when he was nine. They went to visit his brother who was in Japan, and they went to this area called Nara, which I never heard.

But now was the old capital of Japan. And in Nara they have deer. They like miniature deer roaming the streets. And that is the special thing about Nara.

And I would bet my money that is where he got his first tick bite, right? But I had not gone through the detailed history with the family. I would have never known him. Or Bartonella.

No Bartonella can cause but hack scratch disease as well as other types of illnesses. And it's a bacterial infection. And so one of my kids actually well, a few different things.

One kid had two guinea pigs got them at the same time, but one was very aggressive and tried to kill the other one. And so they gave it back and got rid of them.

I got rid of him, but they did keep the other one. I wonder Bartonella is associated with aggression, and I wonder if that one guinea pig that went back to the store, I didn't have Bartonella, which he then shared with the other one, and because the kid later on was sick and one of the things he had was Bartonella.

And you can get Bartonella from different animal species. You can get it. We think, from ticks. That's a whole controversial area. But probably you can, fleas, bedbugs, lice.

Okay, I had one young man who, he had a sudden change in his personality. He became much more anxious and agitated, and it was sudden onset. And he had two cats.

I had the, cats get tested by the veterinarian. The veterinarian called the parent and said, your cat is like four loss positive for Bartonella. Wow. And he was amazed that, you know, the parent even came in and said, test this cat.

And of course, then the cat needed to get it treated for the bartonella as well as skin. But that's why you have to look at the whole environment and every member in there, and especially if your kids sleep with their dogs or cats or whatever, and they go outside, very easy to, get these tick borne and other infections.

Yeah. So, Greenberg, I'm going to pause you for one moment. I can't believe so. We're already we are at the point where the complimentary version of this interview is coming to an end.

And so I want to make sure that our listeners know how and where they can contact you if they would like to. And then if you have any exciting upcoming news to share, please do so.

Okay. Well, I have a website UW w dot Rosalie Greenberg, MD, dot com and on there I left a bunch of articles as well as lectures that I have given related to tick borne illness, infection, and there's also a way to reach me on that website.

I mean, I'm continuing to do talks. I'll be doing one, back tick borne illness in Germany in, I don't have that April and I may well, I think about doing one or presenting at least at one of the bipolar meetings, because I think it's really important for people to recognize there's been a dramatic in Greece, in bipolar disorder, in kids.

And what about for. So those would be more for practitioners. What about for patients like what can you tell us the name of your book and where patients could get a hold of your book?

Well, I don't have a book on tick borne illness yet. Okay, okay. I do have it on bipolar kids, but like I said, there's such overlap that I think you learn from anything you read.

And even my articles that I've written in the medical literature, if you keep it simple. Yeah, if you understand something, you can make the complex very simple.

And that's what I try to do in my writing. So it's really there's a lot, I think, that a parent can get out of just tuning, into my website and listening to various talks and things.

Wonderful. So let's jump back in. So let's start with let's get back into what would you say are the most common neuropsychiatric symptoms of Lyme disease?

Well, mood disorders I see a lot of kids that, very sad or very angry or irritable or a lot of anxiety, a lot of separation anxiety. They don't want to sleep alone at night.

They don't want to go to school. They can't even explain to why they don't want to go, because they don't really know. But they know they don't want to and they don't want to separate.

And these things are very common in, kids with tick borne illnesses. But in addition to the, more emotional symptoms, there are also a bunch of neurocognitive issues.

So what'll happen is you'll have a youngster who seems fine paying attention. Well, very bright. Doesn't have to even pay that much attention to so bright and then suddenly start to struggle and look like they develop an attention deficit disorder.

Because the bugs can affect you cognitively so that you can have problems processing information. And if you think about it, if you have problems processing, it's going to get slower and it's going to get out slower.

So it's very easy in the classroom to start falling behind if it takes you longer. And that will look like a kid who has an attention deficit. Also, you can get problems with what's called working memory.

Working memory. I want something sample of like the SATs or standardized testing. You read a paragraph, you have to take that information, hold it over here until you go to the questions, and then you access that.

If you have problems with working memory, you'll read it. It'll be here. Whoops. It's gone. You got to go back and read it again. So that you can see where these kids are going to struggle on standardized tests.

So there are a variety of cognitive things. Like I said, you'll have the brightest child who suddenly what they may be able to keep up their grades, but now they have to work a lot harder to do it right, because it's just not as easy for them.

So it is a whole sphere of neuropsychiatric neurocognitive difficulties that the child can show. Yeah. And, you know, problems decrement in handwriting in their reading ability, as you see in a, a pans type of kid.

Yeah. So I was I was just going to say that's one of the big things that, Doctor Nancy O'Hara talks about all the time is the, the change in handwriting being such a telltale sign.

Treatment approaches and medication response

Well, I tell the parents, go back and get a notebook from two years ago and look. So what percent of Lyme or tick borne disease patients would, you say have neuropsychiatric symptoms?

And before you laugh, because, you know, to me, I don't think I've ever had any patient that hasn't had some sort of neuropsychiatric manifestation of a tick borne disease.

But I just think that it is so important for our listeners to hear this, you know, to hear this answer and especially from a psychiatrist. Well, I think look, I don't know, to be honest with you, I do know that in my experience, I really do believe it's probably the most common presenting neuropsychiatric symptom.

Most common presenting symptom. Yeah. Sorry. So everything else than any other presentation. There just have not been studies looking at it. There have been studies, but they've shown no problem.

But actually the problem is in the way the studies which were, you know, designed really because if you use very good measures, which we can in terms of memory and cognitive learning, you can see differences.

Is it in everybody? I wouldn't say that. But I don't know how many. I know that, a study was done by Anita Bellman in the 1990s at Stony Brook, and they looked at 96 kids that presented to neurologic clinic with, pediatric, Lyme pediatric neuro.

Berlioz's. And the most common symptom was headache. Okay, 70% had a headache. The next most common one was Oh, it might have been like a Bell's palsy, a facial partial facial paralysis, but that was only in like 14, 15%.

What do you wish to group? Which actually was 40% of the kids that the little ones had no interest in playing. I think you call that depression. Or they look the sudden onset of ADHD, or the sudden onset of bring ciety disorder, which I've described to was very typical of my guys.

So, you know, they're much more common than people realize. And it may be 40% of the kids have that type of presentation. I don't know, because as I said, I think we need good studies.

Yeah. And I mean, I think too, if you lumped, you know, if you added up all of the ones that complained of depression and then OCD and then anxiety and then insomnia and then, you know, and we put all of those together, it's because they're all neuropsychiatric conditions.

Right? Then we're going to be at a much, much higher percent. Well, also, Doctor Brian Fallon at Columbia work with Michael Ben Ross over in, Denmark and I, other colleagues, and they reviewed almost 7000 medical records of individuals who presented to a hospital or a hospital clinic.

And what they found is that 40, 42%, I think something like that for the group that had Lyme also suffered from depression. Okay. It was much higher than predicted.

And also the Lyme group had more suicidal behavior and more actual suicides. Now, if they divided the groups up in ten years, bands. Okay. So like age 0 to 9, 10 to 19, etc., they found that the individuals, the kids that had Lyme disease before age ten were most likely when they are older to make a suicide attempt, they had the highest rate. Wow.

Okay. I mean, and and if you look at it, there's just a lot more evidence in their data that really show, oh, is that these kids are getting depressed and getting upset.

Obviously it needs to really be more focused studies on children, but there's no question if you go through that data, you imagine you get line before age ten.

You're higher risk for making a suicide attempt when you're older. Yeah, that's scary and that's frightening. There's no question. Also, now, I told you that my interest has been bipolar disorder in kids, which means mood swings, manic depression, ups and downs and, and that has dramatically increased in the United States.

Between like the late 90s and beginning 2000. So it's like a 40 fold increase. And there's a lot of question, well, what is that really about? Are some of those just kids with temper tantrums and whatever?

Well, one interesting thing is we in America have a higher rate of bipolar disorder in our kids. Okay. So at a young age and, and they're they're just sicker.

They are like our sickest adult bipolar. And what causes Lyme, the type of Borrelia that causes Lyme in the United States, is much more inflammatory than the Up, really at that induce, Lyme in your and other parts of the world.

So it may well be that we've just got a more aggressive form, because in Europe, the onset, I think two thirds occur after age 19 or 21, one US, two thirds occur by 819.

The onset of bipolar. And I can't help but think that that's playing a role. I wonder, too, if you know anyone more to look at our study having multiple species of Borrelia and then also having these other, you know, having Bartonella, having babies. Yeah.

Having mycoplasma, having chlamydia, having then all the viruses on top of that, it's like, how does all of that then impact somebody's mental health?

Well, there's no question. And especially with these sections, borrelia and bark, what they do is they it's almost as if an immune barrier is lifted so that these other infections, which we all have in our bodies suddenly are coming out to play.

Right? And that's why you get all these positive viral titers. And it's hard because sometimes people will mistake the viral titers. That's what's going on.

You know, it's a high Coxsackie level or whatever. And it really has to do with these other infections. Right? That's more a side effect or a manifestation of these other infections.

Okay. So what do we do? I mean, and obviously, you know, this is like this could be a whole week long talk about what to do. But, you know, what what treatment strategies do you utilize to address?

Let's try to stick more to the neuropsychiatric symptoms. And I and I mean, I know it's like, look, you've got to treat the infection right if that's the underlying cause of the neuropsychiatric symptoms.

But you know, I guess try to stick to, to that realm of this if you could. Okay. Well, I'll tell you, I don't prescribe antibiotics, but I work with a lot of people that do.

Yeah. Okay. Yeah. My feeling is that I am the expert in prescribing the various psychiatric medications, but I am not the expert in this other herbal thing for antibiotics.

And if a kid gets into trouble, I'm not going to know what to do well enough. And I think every child needs to be treated the way I'd want my child to be treated by somebody who really knows this stuff, so that I work with these other doctors and look for some kids.

They need to be blessed with antibiotics. I really they do look like that, okay? They need it. Other kids forget it. They can't take it. They fall apart and they really need to go with the Japanese knotweed and all these other herbal supplements.

And that can be very, very helpful to, but it will go by the individual. You know, a lot of people, I guess, look down upon using psychiatric. Well, if it's an infection and autoimmunity, why using psychiatric meds?

Well, because if he beats his mother up, he can't live at home. Right? You know, or he has such bad anxiety, he can't go to school. Right? You definitely need a crutch or a Band-Aid or something to get through the crisis.

It's a mixture. And they're probably three different groups of kids. One that, okay, they will need these meds during the treatment for the infections.

Final advice and where to find Dr. Greenberg

But maybe once they're better, the infections are eliminated or controlled by their immune system. They don't need any psychiatric meds. I've seen that.

That's a small group, but it does exist. There are other kids that will need to be on psychiatric meds during the acute episode, but you need less as time goes on.

But they still need to stay on some more. Interesting what you may see their self start showing more the side

effects of the psychiatric meds as their body is getting better.

So before you know they were on a ton and it didn't knock them out and now they're so sleepy and it's it's their body getting better. And then you have other kids where they need to stay.

Significant psychiatric meds as well as, you know, the, antibiotics, so whatever. I mean, these infections were just hard to treat. And because there are so many, it's peeling an onion and you don't know what's coming out of the next layer.

I mean, how many times have you seen it? Where, you know, you'll treat a kid and suddenly you see the onset of the Bartonella, right? Who knew? Right.

But, you know, and the each of the things that that one has to think about and and it will vary. I mean, there's a case in the literature that I reported with Doctor Brightwork and a few other investigators of a young man who had a sudden onset of just what looked like schizophrenia.

I mean, he thought the cat was, trying to kill him, and he had all these delusions. I mean, this kid was scared to death and and was psychiatrically hospitalized in a few different places.

It wasn't until somebody noted the striae. Those stretch marks. I said, oh, he may have Bartonella. And they tested him for it. The psychiatric myth. He was on a ton of them, and he had been on a ton of antibiotics.

None of them really touched him. But once they treated him appropriately for the Bartonella infection, he got much better. Yeah. And I was going to ask you that, you see. So.

And you and you answered. But I was going to ask, do you see the effectiveness of the medications that you're using work better? As the patient is resolving their infection with the other practitioner that you're working with?

Absolutely. That's just sometimes what you see is you feel like you're throwing everything you ever heard of in your life with them, and nothing's doing anything.

Yeah, but once the infection is under better control, then these psychiatric medicines then start to work. Which is great. It's really a matter of figuring out where you are in that process with an individual child.

Right. So, Doctor Greenberg, before we conclude our interview, is there anything else that you would like our listeners to know? Any pearls of wisdom?

If there is one thing you know that you could say, what would what would it be that you think people need to hear regarding tick borne disease and psychiatric symptoms or complications?

Well, I do believe that these infections do bring out biological predispositions. Actually, the kids that I saw that I called bipolar, they have family histories, bipolar.

I just think, just like the barrier was broken on the immune system and you start getting these viruses, you started getting the genetics of these psychiatric illnesses that they were predisposed to in a way.

Okay. And those may not go back and, you know, back in the body and go away. They may they may not. And I think that's so you always have to be thinking with these kids.

And that's kind of the fun thing. You know what's happening. Why is he suddenly getting the way he's getting, you know, is it the antibiotic or is it something, you know, really some stress?

So if I keep young toes. Yeah, they sure do. Thank you so much for joining us. Before we go, please, one more time, tell our listeners where they can find you.

Sure. My website, UW Dot Rosalie Greenberg. And wonderful. Thank you, everyone for joining us. We will be back with another episode of Healing Line.