Introduction to Diagnostic Dilemmas

Hello, everyone. My name is Dr. Richard Horowitz, and I am co-host of this DrTalks of the Healing Lyme Summit. And it is my great pleasure to introduce a good friend of mine who we've known for a long time, Dr. Christine Green and we are going to be discussing today the specific topic of diagnostic dilemmas in tick borne diseases, a really, really important topic, otherwise the most commonly misdiagnosed, diseases that mimic Lyme.

So this is a really, really important topic that I'm happy to have. Chris here. And just to give you a brief background and Chris, I'll explain afterwards a little bit more detail about her background.

She's an expert in chronic vector-borne diseases, including persistent chronic Lyme, and the vector borne illnesses that she diagnosis and treats are relatively new.

And the scientific evidence obviously is still emerging. And I had hired and brought Chris on to the HHS tick borne disease working group when I was co-chair.

Chris worked with me when I was co-chair of the other Tick-Borne committees, subcommittee when we were dealing with co-infections. So we've worked together intimately.

And, Chris, it's a great pleasure to have have you here? Please tell people a little bit about your background and how you got into this. Oh. Thank you.

indeed. We've worked together a long time, and I got into tick borne disease when a patient walked into my office in 1989 who looked like this 30 year old young man had MS.

And, it turns out, long story short, after a lot of neurologists, he didn't have MS.. And in the way for me of many things, he brought me a newspaper article and said, could I have this?

And it described a patient very much like him. I looked up the author of the article that was quoted who told me to treat him for Lyme disease, and if he had a neurologic condition, nothing would happen.

And if he had lyme, he'd get well and the young man got well. So after that, I began to see patients in my family practice who had Lyme disease. And over time, the complexity of the disease became apparent to me.

And I have spent time in the literature. I have spent time writing articles. I have been on various boards, including the Eyelids Board, which is the International Lyme and Associated Disease Society.

Right now I'm an education director, co-director for Invisible International, and we do continuing medical education for physicians and care providers in lyme.

So that's how I got into it. It's a, academically, it's a fascinating disease. But in terms of patient suffering, it's a terrible disease. And we have a lot of work to do to to really identify it early, treat it early so that we don't get the chronic Lyme sweating and tick borne disease.

We tend to say tick borne disease. Now because is more than Lyme in those dirty little ticks. Of course. So actually the way you got into this was actually someone who was misdiagnosed with a disease, which in fact was an autoimmune disease. MS.

That's actually one of the doorways. Right? You entered. So why don't we start off with that question? Because that's really what we're talking about today.

Well, what do you see being the most commonly misdiagnosed diseases where Lyme is underlying, the pathological process? So it's interesting because I now see patients who have been sick for a long time.

And one of the things I do is I list every diagnosis they walk in with, and they're usually 10 to 15 diagnoses. So they supposedly have the most common is a chronic, persistent debilitating disease fibromyalgia, migraine headaches, chronic fatigue syndrome.

These are syndrome. These are things that have no cause. You simply look at the patient and say, I'm sorry, you have this syndrome, and we're gonna do our best to make you comfortable, but we can't cure you.

Which which is a mistake because Lyme is a terrible situation and tick.

Dr. Green's Path Into Tick-Borne Disease

But the second most common misdiagnosis is under a mental health umbrella. depression, anxiety. I have had patients. This drives me crazy because I have three children.

I have had patients told that the reason they're anxious and sick is because they have three children. just, you know, the patient is not feeling well and they look depressed.

And if you don't do a proper diagnosis, you can accidentally assume they're depressed because they're sick and feeling that the third category is autoimmune.

again, autoimmune disease in general doesn't have a cause. It is believed to be the immune system getting completely confused and attacking itself. And so I have patients diagnosed with lupus, rheumatoid arthritis or most often nonspecific college and vascular disease, i.e.

they don't find a marker, but they think it must be autoimmune because it looks autoimmune, right? No, that's exactly right. And by the way, the patients come in and tell me exactly the same thing.

It's almost always I've been diagnosed with chronic fatigue syndrome myalgic, except for my latest. I've been diagnosed with fibromyalgia. and with the psych, you know, it's it's of course, much more even than anxiety, depression.

It's obsessive compulsive disorder. It's it's psychosis. Schizophrenia. Once we start getting into Layman Bart. Right. You start seeing these really severe neuropsychiatric.

And the patients are coming out on loads of psych drugs, but they never got to the source or sources, right. Of of why these people are ill. so I agree with you.

And, you know, even what's interesting, and I think this is an important point, some of these people do have what I would call a true autoimmune illness.

Like, I've had patients come in with rheumatoid arthritis where they had not only rheumatoid factors. And we'll get into this in detail, which are nonspecific inflammatory markers.

But they had CCP right. They was cyclic citrullinated peptide positive. They actually had what we call true rheumatoid arthritis. But they had they weren't responding to methotrexate and they had migratory pain.

And the migratory pain is the hallmark of Lyme. So what it was is yes, they had rheumatoid, but they got bit by a tick. So they had more than one thing wrong with them.

And I think sometimes doctors and patients forget you're allowed to have more than one thing wrong. But Lyme can be underlying right. A lot of these illnesses. Exactly.

And treating the underlying can relieve the symptoms of the autoimmune diagnosis. Yes. No. That's a great point. So so tell me when you're taking a patient history, how do you distinguish Lyme from some of these other diseases like what role does duration and onset of symptoms play.

How do you how do you make the differential. So one of my umbrella concerns in medicine is that the time with the physician has been cut to two minutes sometimes.

and I, I think of myself as a classically trained doc, you know, I think the history makes a diagnosis, and it's not it's limited. It's any disease. Lyme maybe is more important because it's become a huge dependency on laboratory values.

And the testing in Lyme is just plain lousy. but, the history will give you the diagnosis, and so the timing's important. And the development, the course of symptoms developing is important.

Most usually, there's an onset for a patient. It's not mandatory for the diagnosis. But most usually the patient will say, I got sick in July of 2020.

And, you know, I thought I had a virus and it went away. And then I got another virus and I thought it was something different. And then I got another one.

And I realize it's the same thing coming back. And what I would tell you, and this is clinical impression, this is not peer reviewed literature.

Common Misdiagnoses: Fibromyalgia, Mental Health, and Autoimmune Disease

I think the most common picture is that it keeps coming back and it gets closer and closer together and can end up never leaving, so that you get this evolution of, gosh, I, I heard all over and I had a headache and I think I had a low fever.

I felt like I had a fever, I had sweats, I felt really bad. I got over it and then it came back. The other nature of Lyme and tick borne disease is it is an infection.

There is a real pathogen in the body, and Lyme and Bartonella for that matter, can go anywhere. They do not have a tissue tropism. That's only for one place in the body.

Right. They Lyme especially you watch that little spider again. It can zoom around. It's one of the fastest bacteria known. and it can go neuro. It can go to cardiac, it can go to the bladder.

It of course can go to the soft tissue. It loves that connective tissue. but nella similarly, can make a blood vessel in any tissue. I, I've been told by Doctor Ed Braithwaite, who's an expert in but analysis who really brought it the modern Bartonella to our attention.

that in a lab he hasn't found a tissue that won't invade it. So. So what you see in the course of this is recurring symptoms, but they begin to go elsewhere.

You know, it started with a headache and a little fever and shakiness, and then, oh, my gosh, you know, my ankle hurts so much, I, I couldn't walk on it for two days.

and you get this course of migrating through the body, you'll start hearing anomic symptoms. This bug will go into the central nervous system. It will go into the brain, the spinal cord.

Hence my Ms. patient. It it will go into the vagal nerve. Into that, I don't know, nervous system. And it will trigger problems along the way mast cells etc..

So you see this this recurrent set of symptoms that that begin to have other symptoms connected with them, which

is why often the patient is identified as a malingering someone who worries too much about their health or something like that, because how could this be?

And the way it can be and we can talk more about this later is the nature of these pathogens. They are stealth pathogens. They have the ability to get into the body and evade immune detection.

So we don't wipe them out. And while they're evading immune detection, they go home. That place over there looks really juicy to me. I'm going to go set up a, you know, something over there. So.

Right. So the point you're bringing with these clinical presentations is like Lyme and Bart. It goes everywhere in the body. So for central nervous system headaches, light sensitivity, sound sensitivity dizziness, memory concentration problems, sleep disorders, neuro psych depression.

Right. Because it gets into the central nervous system, the autonomic that you are describing, that's dizziness, standing, palpitations, fatigue, brain fog, anxiety, which we're seeing with long Covid.

Right. And it the lymph nodes you'll sometimes see large lymph nodes with Bart sometimes with Lyme gets into the heart can be second or third degree heart block.

Right. the pulmonary is more the busier but even the gut. Right. We're seeing gastroparesis with the autonomic nervous system, chronic constipation, muscles, joints and the migratory aspect again, which you and I just mentioned is kind of a hallmark symptom that I think helps the patients and the doctors to diagnose it, because there's only really seven diseases in medicine.

When we when we published our screening Lyme questionnaire back, I think it was 2017 with the researchers from New Paltz, we found there was only seven diseases in medicine, lupus being one of them.

By the way, that temporary caused migratory pain. We're going to get into this later. But, you know, I joke with doctors, unless you're at the bottom of your medical school class, you should be able to differentiate gynecologic arthritis and ulcerative colitis, Crohn's and acute rheumatic fever and writer's syndrome.

You know, with these sausage dessert digits and acute hepatitis. Right. you should be able to differentiate these things normally from Lyme. I mean, that there's a very different clinical presentation.

So the migratory is really common. As you said it's multi systemic good and bad days comes and goes. And then it there's a point as you said it all comes together right where people start getting sick day by day.

And it just it doesn't go away at that point. And I think the the nature of it has been called the second great imitator after syphilis. And what does that mean?

It goes anywhere it wants to in the brain. The brain is how we perceive. Right. So, so, I, I used to say, and I sometimes still do, that my line patients are the best worked up patients in the world because they'll have this pain, they'll have this pain in their liver, you know, and I'm looking at the liver and I'm looking at the spleen, and and they have a ridiculous that they, they basically have an infection in that little ridiculous root which lime loves to go to.

And, and it's giving them their symptoms. And that is extremely common. I think I should have said ridiculous apathy is one of the major missed ones. No. And for people who are not physicians listening, we're talking nerve pain, right?

We're talking neuropathy, a specific type of nerve pain. And you're right. I mean, it's it's burning, tingling, numbness. It has a very specific clinical characteristic.

So when someone comes in with neuropathy right. You're right. It can look like liver pain or something else. But once you ask the patient the clinical characteristics and it's neuropathy, then you've got to do a differential to say right what what's causing neuropathy.

Right. It's a climb. Is it barred. Is it heavy metals. Is it mold. Right. We've got to go through the piece. Is carpal tunnel pregnancy hypothyroidism right.

You have to go through the differential of what causes neuropathy. Will it I think the I tell patients this is like shingles. Shingles infects that little little root.

And just like there's a distribution to shingles there's a distribution to that radicular apathy. And there is neuropathy in reticular apathy. So that's right. No risk factors that increase the likelihood someone's going to get it.

What what do you think might be a reason why somebody might get a more severe case of it? do you think there's people who put out more carbon dioxide heat?

They attract the ticks. You think it's hormonal and some immune dysfunction? Do you have a general sense of, the the major risk factors, why? Some people get a lot sicker.

So I think one of the areas in medicine that's very exciting right now is what's called precision medicine, where we're we're having the ability to look at, your genetics versus my genetics and, one of my favorite papers that actually changed how I behaved in Lyme is written by an evolutionary biologist, Paul Ewald, who talked about, in this case, chlamydia pneumoniae and the ApoE4 gene and smoking, and talked about how bugs evolve for different genetic systems.

How Lyme Presents Over Time

They are successful in different. And so there is some thought it's it's not just me. And I would say it's not my original thought that people who are hypermobile and have a danlos or hypermobility somehow don't deal as well with this by repeat, as other people.

if there is, certain autoimmune tendencies hla b27 if if there are some family histories and those people end up with Lyme or Bartonella, and I think it's, I think it's different for different, bugs for different infections or path pathogens.

and yes, I, I have a feeling I can get Lyme and get over it because I've had an immune and and I took my dutiful, you know, month of antibiotics. but you but you got it early, which is part of the reason.

I do early as. As know I by the way, I got it almost 30 years ago. Got it early and been fine. And of course, that's the problem. It's the chronic states that are the problem for people.

Yeah, right. And and the mis people if and perhaps if I had been missed, you know, there would be a problem because that's part of it too. But I suspect that there are people who are in more trouble.

and I think we need to keep trying to identify who those are. Right. I'm just going to have one quick question. these co-infections, you've been discussing them.

Just tell us briefly, like if somebody has Berbizier, what are the most classical symptoms you're seeing? how are you differentiating Bart from Lyme when you're doing it?

They're hallmark symptoms you're seeing that are really standing out. Yes, there are. And, I hasten to say that this is really hard to document in the literature.

There's very little in the peer reviewed literature that says, here's the peer, but these are your patients, and here's the symptoms. again, doctor Brightwood doctor.

And he had done good jobs in Bartonella giving case reports. So we have some information from that in a bit busier patient. But Bézier is a red. So parasite it is in the same group as malaria.

And just like malaria you get sweats and chills with it. It's not the rigors usually of malaria. It's the exceptional

patient who gets that level of it.

but it's drenching night sweats. or the coldest people I've ever met have the b. Yeah. I mean, I remember when I began this, I have someone say, you know, we pile on three quilts and an electric blanket, and she's still cold.

So temperature intolerant. But Basia also has a reputation of causing depression or anxiety. And I think that that when I see her is a we could talk about that afterwards.

I think that's probably true, that for some people that's in the in the area of the BS, you know. Absolutely. I mean, it definitely makes the patients were so you were talking about the busy and things making worse.

And I agree with you. I don't even see the classical. But because of the red blood cells bursting apart this hemolytic anemia, I've only seen it twice, right?

In all the years. It seems like when the bugs come together, when line but busy apart comes together, the BCA doesn't act like it does in the textbooks.

When you read about the red blood cells bursting apart and, the kidney failure and the problems with the liver, it's only really the immunosuppressed patients with congestive heart failure in the hospital who seems like they're getting this.

So splenectomy. Yeah. Yeah, but but it's true. It's confusing for docs because you read it in the textbook and it's like, why am I not seeing hemolytic anemia with, you know, the red cells bursting in for some reason, the way the immune system's reacting, we don't see it in in the same way.

So it's a good point. It definitely makes everything worse. And I also see a lot of that, air hunger, that shortness of breath and cough. We can explain, apart from a little aerial of the day sweats, night sweats, chills and flushing, I would say that's a it's a pretty classic presentation, even though I've never seen an Ards, an acute respiratory distress syndrome, either from Covid or, by the way, or from the Busia malaria, even though it's reported, I, I've never seen it in our patients.

I don't know if you. And I think the air hunger it's interesting to me because in little children, you see them in the course of the visit, they will like, be taking this big breath.

and and it is, it's it's not shortness of breath as we sometimes see in, in asthmatic etc. the the patient will say, I just don't feel like I can I can get breath right.

And the differential is you got to make sure. Of course they don't have emphysema. They don't have asthma. Right. They're not broncho constricted. they don't have a bad post nasal drip. Right.

I mean, it's always differential diagnosis, right? It's always it's always the same thing with it. Yeah. And many of my bad, the busier patients do end up, seeing the pulmonologist because, and again, especially early on, I wondered if somehow they acquired asthma, they acquired bronchospasm from the Basia.

And interestingly, I worked with a pulmonologist who started to see many of my patients, and he said, Chris, the problem is their diaphragm is weak. They get a weakness in their diaphragm.

He had this special test, and that was often what happened with the the Busia air hunger patient is they couldn't bring down that diaphragm to really expand the lungs.

And as treated they'd get better as they were treated. So and and the vagus nerve of course does get affected. Right. With you were saying what with the Ellis down those patients.

You're saying the ones that have that predisposition, the ones who get this sort of anemia, right, with the autonomic nervous system effect with Pots, they have the roughest time, right, with the vagal dysfunction.

and certainly the diaphragm can get affected. So, yeah, it's a it's a good point. let's go on to Bart for a second. We were discussing Bart. What are the hallmark symptoms you like in Bart when you're making the differential diagnosis?

So, again, there's always this trouble of how many, how many pathogens are active in a given, chronically ill, tick borne disease patient? my colleague, Betty Maloney.

whenever we we're having a discussion and I say, oh, everyone's got at least, you know, 2 or 3 of these, she said, no, no Lyme alone can cause this. And here's the data and it can.

But I think most often when you have a chronically ill patient, they have several things. So I talked for islet and I would use the word the flavor of the flavor of.

But nella walking into your office because again we can't write these things in stone. So what I, I think probably going in the path of mnemonic signs of Bart is tracks or Austria, whatever we're going to name them.

and it's one of the few, you know.

Lyme and Bartonella Across Body Systems

Yes. It's a diagnostic in this tick borne disease. What you can just for the audience who are, again, are not doctors, you're talking these either horizontal or vertical stretch marks that almost look like you lost weight or gained it. Right.

They could be white, they could be purple, but they're just like the M rash. The you know, the classic rash of Lyme is this year with the migraines bullseye.

Although it's half the time not a bullseye, but the classic rash for Bartonella. Right. Are these type of stretch marks right, that we call right. And they often don't go in in the line of the stretch marks, which is one thing.

but they sometimes do. They start out red. They'll fade to white in most people. and you often see them in, in young men, in teenage boys, and, and they suddenly blossom straight horizontally across the back.

so, so what is a patient look like as opposed to the, the alignment of the busier, but, psychiatrically. I would tell you, when I see someone who says to me, Doctor Green, I get so irritated, this isn't me.

I mean, my my four year old do something. Four year olds do it. I'm so irritated about it. or the person who says I get rage, you know, this is I shouldn't be raging about this thing.

I do. Then start thinking I'm going to look hard for Bartonella at that point. There is a very nice paper. I think Moses and bright shirt with both on it, which is a, a rheumatology practice in Maryland, I believe, where they looked at.

But nella patients and they looked at the subgroup that had been diagnosed at some point with Lyme and those, that combination, Bart and Lyme had worse joint problems.

They had more persistent, painful joint. I'm sorry. I should move my computer. Cable? so I, I do think that if I see, someone who has particularly refractory joint problems, in spite of being treated for what I think is an underlying Lyme, I will start thinking about Bartonella two.

Right. So, so, so to sum up, so basically what you're saying is and I agree with you 100%, it's the severity, the most severe patients that come to see you with the most severe neuropsychiatric, the most severe joint pain, the most severe neuropathy. Right.

in the paper we just published in microorganisms about three months ago, we also found it was the ones with the most severe autonomic neuropathy, like the most severe resistant parts, the neuropathy, the bottom of the feet.

Right. Joke were scattered despite this years ago. And I have to admit, I wasn't sure it was true early on. And yet it is right. It it really is something you hear from these patients.

I don't see the large lymph nodes as much, and I occasionally will see granulomas, on the extensor surfaces with Bart. I've seen it in a in a couple of patients.

but it is really the severity, the eye problems they describe. I haven't maybe seen, you know, retinal occlusions and arterial. I haven't seen those as much or even thank God, so much optic neuritis.

But I would say it is the severity of the neurosis and the pain and the neuropathy. And in our study that we just published also immune deficiency, the ones who had the most Bartonella species, if you had been Sony and Elizabethan, Hensleigh and Quinton of Bexhill, the foremost multiple species with the BCA, those were the ones actually who had, the worst immune deficiency, low IgG levels, low subclass.

so now I'm looking for like, hey, you have immune deficiency. Gee, I wonder if Bart, I used to think it was just like, I just learned this even a few months ago when I data mine for that recent paper.

Well, and and definitely these pathogens. We're talking about a stealth pathogens. They have the ability to both manipulate, and suppress certain parts of the immune response.

so I do think you can get an acquired immune deficiency very hard to. And again, the if you are a doctor out there, very hard to to get that treated, to get your IVIg for that because, it's mostly for primary immune deficiency.

But yeah, I think I think you do see it. Yeah. now question also, I'm seeing a lot of mycotoxins illness lately in our practice with mold toxicity. I you seeing it.

Are you seeing that in your patients. How much are you looking for it? Do you find the symptoms are overlapping or getting worse, or that it's interfering with your success? You can you speak about that a little bit?

I can I want to say one more thing about but bird is known to cause pericarditis. Myocarditis, just like Lyme is. So when I have cardiac symptoms, and I will always, always screen for, for bird as well as for life.

so mycotoxins illness. So I, long before I was introduced to Lyme, I worked with patients who had, colonization who had infection of, various tissues with, mold, with Aspergillus, Penicillium, and I developed a great deal of respect for mold as a problem.

the toxic mold I so those little guys are living in us, and they can make toxins, or they're living in our environment and we're acquiring those toxins.

is is clearly a problem for many people. and I distinguish, The patients that it's a trick question, by the way, because it's almost impossible, I think.

I agree, the one thing I thought about when someone tells me they feel poisoned, they feel a kind of illness that is just they're just sick. I do start thinking of toxins, including mold toxin.

You know, I, I start thinking that's not your classic description of your tick borne disease patient. So. So that's the one thing.

Risk Factors and Bartonella Clues

Obviously, there's evidence that mold toxin can mess with the immune response, which could perhaps augment or support, the, the infection. And I have a colleague that I work with, with Invisible Charlotte now who is a pediatric infectious disease dog.

And she said, you know, I'm beginning to think that the contribution of mold is, is that it hurts the immune response

or it poisons immune response and allows that tick borne disease more free rein.

Oh, no, there's no doubt. I mean, the the Leo toxins specifically are affecting immunity. And I think what the reason this is so important for people who are attending this healing Lyme summit is that, if you've not been tested for mold and you have found that, hey, you've done some of the classic treatments for Lyme for Bartonella and you're not better, you should absolutely, absolutely check it.

Because I had a talk with Neal, Nathan, a little bit earlier about this, and I was not a full believer. I believe people have been exposed, but in my world, usually when we cleared the infections, they got better.

But lately there have been some very resistant patients that would get better, but they weren't improving the same way. They denied mold exposure. We tested them. They were loaded with it.

We pulled it out and all of a sudden that was the missing link. They said, oh my God, I'm like, I feel almost 100% better. So it's tricky. The only thing I would say that may be is a clue to it is the chemically sensitive ones that walk into a room and they can smell the mold and they get.

That's because most people don't do that. Those ones that are mold toxic. More than not, I hear that from them. Like, I can't live in this apartment I walk in, the husband smells nothing, right?

The kids smell nothing. They think the wife is great and yet they're very sensitive to it. That's something I would say. Maybe we we see. Yeah, I agree, and I was going to say I have a patient who, fits your description.

He was a very he, he got temporal lobe epilepsy as his presentation of Lyme when he was at Boy Scout camp. and he, is quite mold sensitive. And he discovered that he couldn't go into the refrigeration area in a grocery store.

He kept it gets into his mom. I can be here and is wrong. Something's wrong. And it turns out the mold specialist said that's where the mold is in the grocery stores, and that refrigeration is accurate.

So I was going to say that that one of the ways you might be able to distinguish is if the patient's telling you there are certain locations that make them sick.

That should not happen with pure tick borne disease. Right. So good, good. Let's let's get back a little bit to what you brought up earlier because we we haven't gone into detail on the room.

It's logical diseases. if somebody is coming in with joint pain, or they're coming in, let's say you thought it might be lupus or not or Ms. or not. How are you doing the differential for those as opposed to Lyme?

Again, remembering people are allowed to have more than one thing wrong with them. What do you like as far as diagnostic markers or clinical markers? I do the classical autoimmune testing.

I'll look for lupus markers. rheumatoid factor and, you know, c c p I just do that whole list, in terms of clinical exam, you mentioned and I think this is very important and, and this you presented with your validated questionnaire.

I remember this, I think it was 2015, by the way. you said there are three things migratory, arthralgia, migratory myalgia and migratory neuropathy. You get all three of those.

If you carefully read your paper, you probably got it slammed up for Lyme. Right. It's true. And you're right. And it's it's an unusual when you won't see that with lupus generally you won't see it with rheumatoid arthritis because it's bilateral symmetric.

Exactly. Right. And and of course, as we said earlier, the problem with Lyme though with all the or and it's the same thing with long Covid, these people are getting huge amounts of autoimmune markers. Right?

I mean anti fibroid antibodies, anti myelin antibodies, anti glandular side and A's or antinuclear antibodies

rheumatoid factors. So the problem is if you don't recognize that Lyme causes this you might think oh it's a nonspecific autoimmune illness right.

But the CCP has to be positive with rheumatoid for lupus I like the double stranded DNA and Smith antigen. Right. I think that's a right. That's a good way to differentiate that.

I would say has been demoted to an inflammatory marker. And then you have to go from the RNA to tell that, you know, reggaeton has given a couple presentations.

She's a rheumatologist who's treated Lyme for a long time and, a couple pearls I picked up from her the the knuckle. And these deep joints are more likely to be reactive in Lyme, whereas of course, your amp joints are more likely to be rheumatoid arthritis.

The late Lyme patients, they're all red. I call it striping. You get a stripe here, you get a stripe. They're you know, they can be 23 years old. And that's what their their hands look like.

the other thing, Gato said, and occasionally I find this she said in rheumatoid arthritis, the patellar, the lower patellar tendon, patellar ligament is sore in Lyme.

It's the the upper. And occasionally it's very specific that that I find that. So, you know, the rheumatologists who are trying to distinguish this, she did one other it was in a study she presented in three patients at Islands early on who had rheumatoid arthritis and had Lyme unequivocally had both things.

And she treated just for rheumatoid in a group in, you know, just for life.

Mold Toxicity and Overlapping Illness

But it's when she put the two together that they got better. So and I found the same thing that I found that the, for example, the rheumatoid patient I had that did not respond to Arava enbrel, steroids, methotrexate failed, everything were toxic map.

It was only and he had migratory pain. After we treated the Lyme, interestingly enough. And we gave him methotrexate. The methotrexate worked. Yeah. So it was like you had to clear the underlying infection for the autoimmune issue.

Right. To finally get better. And I mean, from the beginning in Lyme, comments have been made that the amount of inflammation for the amount of spirit keep failed is out of line.

So Lyme is going to inflame more the underlying inflammatory condition. And you remove one layer and then they can respond to that inflammatory. So I know because.

One but let's go on for a second to Ms.. For that patient you initially saw with Ms.. it's very tricky because you get demyelinating lesions right. In the central nervous system, you get myelin, basic protein, a little clonal bands in the spinal fluid.

What do you like about I mean apart from the migratory aspect which we talk about anything with Ms.. For you that is more specific, that helps you with the diagnosis.

It's it's the big picture. It's that you aren't just getting the demyelinating symptoms, you know, you are getting. And you said, except for this, but you are getting the migratory.

I told you they have disorder. No, Mia, you know, it's it's that pattern recognition that you're looking for. they have more than what you expect from the Ms.

patient. with the disorder? No. Mia, you often see in Lyme, a stiffness, stiff man syndrome, which has been

promoted to this stiff person syndrome, at least by Stanford.

and, I think you. Well, well, with, Ms.. You do get some of that rigidity. It's very again localized to where those demyelinating lesions are when it's a more general picture.

now, that said, if I had a positive limb and the patient looked exactly like they fit Ms.. Only I would still treat the lie. I, as you said, they can have more than one thing.

And sometimes, to your surprise, I mean, I've had rheumatoid factor positives keep positive people treated for Lyme and those things disappear. Right.

And in this case, they discovered in the last couple of years that there are Epstein-Barr virus variants that are now associated with Ms.. Apart from the older ones like low vitamin D and chlamydia pneumonia.

Right. I mean, Steve Phillips, when he used to lecture would talk a lot about the fact that it was in the Farrow Islands, right, that they never had a mass.

And then the British invaded and all of a sudden there was Ms.. Meaning there's an infectious pathogen here that seems to be right. So, I mean, so over the years, I mean, we've discovered it that the one thing that I think and I'm curious if you've seen this also, the one thing I learned that I'm curious if you agree with this when you do the MRI's of the cervical Lumberton thoracic spine.

The one thing I don't see what that Ms. with with mass. I usually will see that there is demyelination in the cervical and thoracic with line. When I've looked for it, I've seen the white spots in the brain and I've seen it where there can be a lot of them.

And you can't just differentiate from, you know, the corpus callosum outward, how many are there? But they don't generally with Lyme, they don't generally demyelinating the upper part of the spine.

And if I see demyelination in the cervical, the thoracic, it says to me that may be an Ms. picture. You know, look at the amount of myelin basic protein in the amount of oligo clonal bands.

But since you get it in both Lyme and in M. S., it can be a little tricky. Do you do you find that that's the same with the MRI? If you've seen that. I will watch.

But I have not observed that. But now that my eyes are open, I will look and see. great. Good. So what else do you think as far as differential diagnosis, we were talking earlier about chronic fatigue, myalgic myalgic encephalomyelitis, fibromyalgia.

Now they can be caused by viruses. Years ago and in California they were talking about HVC six EBV. I mean so an interesting I think now with Covid being out and the flu, we're starting to see reactivation of other infections.

Differentiating Lyme From Autoimmune Disease and MS

In fact, my wife recently, had Covid for the second time, got over it, got the flu, gave her some Tamiflu, got over it and then reactivated some other stuff underneath and was complaining of like trigger points and stuff.

And I was thinking, gee, it was all the foods and the mast cell and like trigger points. And I realized after she went on, some fans like leave her for viruses.

This thing she's been complaining about and these trigger points went away. And I realized in some of these Lyme patients who've been complaining of chronic fatigue, fibro, they do have underlying viral infections and sometimes they reactivate.

And it's not one thing right. And it's an important point to keep in mind that this is a soup of viruses and bacteria

with Lyme and Bart and and fungus and mold, right.

And parasites, it's usually never one thing. It's it's a combination of all of these things. So make sure you look at the flu as opposed to Tamiflu, which works on the RNA.

And it appears to have some, some activity against Covid. yes. So before I treated Lyme, I practice in what I call the shadow Stanford. And I learned from a very wonderful doctor, Jose Montoya, how to recognize reactivated virus in the chronic fatigue patient and to treat it so I think that both virus and tickborne pathogens can mess with the immune response enough that you get reactivation and things that we normally carry around our immune system very carefully controls.

I mean, we are a soup or a stew, however you want to think about it. So I have always looked for reactivated, virus in my chronically ill infected patients.

Whether the infection began with a known tick bite, if if they've been sick for more than a year, then I will start looking for the reactivation. I'll tell you. Interestingly, since Covid, I have many, many more positive PCR to Epstein-Barr to herpes. One to, CMV, Herpes virus six.

I've also been seeing reactivate some of these patients. And and those patients won't get well till you treat, treat the virus. I mean, I tell them, I say, look, we don't even know if a virus is alive.

This is a philosophical debate, right? It's just this little thing that keeps making more of itself. And then your immune system is seeing more of it, you know, and reacting more. So.

So yes, I think when you have, if, if you're the patient in your chronically ill and or if you're the doctor, you're trying to figure it out, do you think this is an infected patient?

Definitely. Look at all those things we've all had. Americans have mono by the age of 40, 75% of us by the age of 20. Almost all of us have HHV six. By the age of of three C and V, I find more likely to be in people who have been in medical facilities.

It's a little less common than you. EBV herpes maybe inherited through the mother's right DNA. I mean, herpes one is present in almost everyone by six months, right?

So so yeah, I think reactivation of underlying pathogens, including chlamydia and pneumonia, I including mycoplasma, which might be a tick borne pathogen, but we certainly 40% of the world has it.

And it's not all from ticks. We we get it by coughing in grade school. so so yeah, the co-infection is not just code Tickborne infections. It's it's other active. Right.

So and I think you brought up a good point a lot of these patients come with very high Epstein-Barr virus titers or HSV six whatever. But it is the PCR right.

It's the pieces of DNA in the blood where they give you the logarithmic amount that says, oh, it's reactivated. And that's kind of how we know when to use the the antivirals.

And I must admit, there is definitely a subset of patients in it. You're right. I've seen the same since Covid. Definitely more viral. Maybe I'm looking for it more, but definitely more viral reactivation.

So if someone's not getting better from your standard line but Busia bar treatment, right. You got to look for mold. You gotta look for the viruses. Do the PCR is for it. Right.

You gotta check this just to make sure. Because you know, the problem with chronic fatigue and fibro is that fatigue, joint pain, muscle pain, sleep disorders, brain fog, dysautonomia are all the same symptoms.

And it could be caused by a virus and it could be caused by lime. It could be caused by Bartonella. So it's really amount of teasing it out right. As we're talking about and doing a differential diagnosis.

So the immune system has a limited number of ways it can respond to a problem. Right. If the response if if the infection or the problem is inside the cell, that will be a certain response versus in the blood or in tissue.

Viral Reactivation and Chronic Fatigue Overlap

if it's inside the cell, whether it's a virus infecting or Bartonella infected, you're going get the same cytokine pattern like TNF alpha. there is some different ones for specific organisms.

Lyme will have TNF alpha and il6, but it will also have IL10 sometimes because it's manipulating our response. but so yes, it's very hard to distinguish what thing is causing the symptom.

As you say, it's brain fog. And so it really is. I want to clear though, I don't, I don't, require a PCR positive to treat virus early in the chronic fatigue story.

when it was thought that it might be Epstein-Barr causing it, it was noted that if early antigen and nuclear antigen are very high at the same time, antibodies are very high at the same time, that that's a dysregulation.

Even if the virus reactivates, you get early first and it goes down and the nuclear comes up. Now that's been mostly considered not that, not a good diagnostic tool.

Personally, I've used it from the beginning. I think it's a good diagnostic. When you learn by, I mean you learn from one of the experts. Montoya was one of the guys who was first talking about HHV-6 and chronic fatigue and illnesses.

So you really did learn from one of the experts early on. And so so if I think if if the IGG's to viruses are very high, I don't think it's just a past infection.

I think it's a reactivation. And as you treat, you will see those numbers come down. And I have it's probably only a handful over the many years. I have a group of patients who every time they start the antiviral, they would start getting sick again.

And finally, when they came to baseline levels right to that level that most of the, the, people have, they could stop. Right. And I and I've seen exactly the same thing, by the way.

there are some people that just have to stay on chronic fams like liver or whatever to be able to stay. Well, otherwise they just keep reactivating. I, I agree, I've seen the same.

So we're we're almost out of time. So just a quick question. Let people know how can they contact you. do you have any upcoming, seminars, anything you want to tell people about?

before we finish up? how can they contact me? best to contact my office. I practice in Palo Alto, California, where we have tick borne disease all year long.

It is not a summer flu out here. and probably best is to go to christinegreenmd.com, and put in inquiry in there. I do not currently have any coming seminars.

I'm probably going to be at the AAFP presenting information for doctors at a booth in September.

Closing Remarks and Contact Information

and is invisible international doing anything new apart from the doctor training and those programs, anything new coming out from Invisible International?

Oh good question. And I'm a terrible advertising. So Invisible is mostly generating. ICMEs we also have, not webinars. We have competitive, solutions.

We kind of put out a problem when we get teams to, compete. And we do have, we are funding a few teams to generate, their solutions to different problems in life.

Right. Good. Well, Chris, this was great. I want to thank everyone for attending this particular session of, the very important differential diagnoses for how you differentiate Lyme from other diseases.

And it's my great pleasure to be with you, Chris. Chris, you've been a good friend for a long time. We've worked together, being an ILADS. And I'm really glad you could take the time today, to make it with us.

So I just want to thank you again and wish everyone well. And hopefully you'll be tuning in for another one of the DrTalks on our Healing Lyme Summit, and we hope to see you soon.

Thank you so much. Thank you, and thank you for doing this. It's really important that we get this information out so people treat early. If you think you have Lyme, go see someone.