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Check them out at Functional Medicine University. Hey everybody, Dr. Rob Silverman here, Proven Health Alternatives. I have Lyme expert, extraordinaire, Dr.

Mariah Hinchy. How are you? I'm great, Dr. Rob. Thanks so much for having me. Mariah, I'm excited to have you really give us and share some interesting, leading edge knowledge bombs because you're in Connecticut, I'm in Westchester County, New York.

Lyme is a huge conversation piece. But before we start, let's look at vector-borne diseases account for more than 17% of infectious diseases. They typically transmitted these vector diseases by mosquitoes, ticks, fleas.

The big guy of vector-borne disease is Lyme disease. That being said, you are an expert. When you work with a patient with chronic vector-borne disease, what is your main focus?

So my main focus is on restoring immune balance. Basically, I want to take the patient and I want to look at the pieces of the puzzle, which obviously the infections are a part of, that are leading to this immune imbalance and fix everything in that background to help to make the patient inhospitable to the infection, which a huge piece of that is restoring immune competency or immune balance to the body.

Wow, you talked about immune competency. You talked about this unsettling, this unsettling of the immune system. How do these pathogens unsettle the immune system?

I've heard you really talk about when they enter the body, they cause an unhealthy environment or a pro-inflammatory milieu. Yeah, so one of the main ways that this happens is the presence.

So it all starts with the flagella, which is the tail part of the bacteria of the spirochete called Borrelia. And the presence of a protein called flagellin on this flagella ignites this pro-inflammatory cytokine cascade.

So it starts with something called nuclear factor kappa beta, as well as the MAPKs. And this leads into all of these other inflammatory chemicals in the body being exploited.

And it's part of the immune system's natural defense at going after an infection and resolving it.

Immune Balance in Chronic Lyme

But what happens is when these inflammatory cytokines are manipulated to stay prolonged, like at this prolonged elevation, that it not only causes a multitude of the painful symptoms that we see and the dysfunction, but it causes an imbalance in what's called your T helper 1 or your T helper 2 and even your T helper 17 branches of the immune system.

And then this is where the body, in some instances, can actually start to attack self. So the unsettling of this immune system causes the body to lead down that slippery slope called autoimmunity, which is that immune competency that's kind of left by the wayside, if you will.

So that theme of immune competency was great. Most people don't realize they think their immune system is like a switch. You wake up in the morning, you turn the lights on, and here it is, and it works great.

But here you're saying that these pathogens cause a failsafe in immune competency, and that failsafe is looking at the innate immunity and the adaptive immunity and looking at T cells coming from the thymus being T17, T1, and T2, which are different, but that unleveling is leading to an unsettling of the immune system.

Right, and so I think a lot of people don't realize that, well, most people I didn't realize until I actually sat down and did the research. I thought inflammation was over here, and the immune system was over here, and they were two completely separate pieces of the puzzle.

But it's these inflammatory cytokines that I kind of rattled off that literally play a huge role in what type of T helper cell the immune system is going to make and how many of them it's going to make.

So these pro-inflammatory cytokines are literally telling the immune system, do we want T helper 1s? Do we want T helper 2s? Do we want T helper 17s? And we all do and should.

have all three of these, but it's the dominance, right? It's like the scale being tipped where we have a dominance in one of these over the others. And the way that I explain it to my patients is, look, our immune system should act like a sniper, where it has the proper weapon.

Sorry for the gun analogy, but the proper weapon, the proper ammo. It can put the red dot right on the target, and it eliminates the target for sure, but without blowing up anything around it.

And what happens is our immune systems know something's there, but Borrelia, for example, is so good at hiding and camouflaging itself that the immune system switches into this mode where it's like the plane flying overhead, dropping the bomb, and it knows its targets down there, right?

in a proximity, and it drops the bomb, but maybe it got the target. Maybe the target kind of like ran away, but it for sure blew up the terrain in the process, right?

And that's how also this infection makes our bodies hospitable to the infection by the immune system attacking self in the process. I love the description you just gave, and I love the idea that you attached it with inflammation.

I think most people don't understand that the immune system has the ability to have initial inflammation, and also when it creates antibodies not to go too deep.

Antibodies can also create immune inflammation during the complement cascade. I love you the way you said, you know, everybody listen, she's telling you that this Lyme disease, the reason, the bacteria behind Lyme disease actually lays there, changes the terrain, is sophisticated enough to evade the host's immune system.

That's why you're having this cascade. Wow. So it's hidden, it's hiding and it's causing you to really raise the level

of inflammation, leading you to deleterious effects.

These mechanisms also include interfering with or presenting with like an antigen presentation, blocking the T cell appropriate activation, like you said, and really supporting inflammation.

So that being said, what do you do? You know it depends on the person you know it depends on I think one of the important things to bring up right now before we talk about that is you know everyone has different genetics everyone has different injuries everyone has their own you know unique digestive system and microbiome and damage to all of those things into structures.

And Lyme will go to areas of dysfunction and inflammation like a magnet because it's a free buffet for it. So so much of our body is made from collagen and connective tissue.

And Lyme gets every bit of nutrient that it needs from collagen. And so previous injuries, areas of more toxicity where there's going to be more oxidative stress and more damage, it's going to go to those areas because it's easier for it to feed there.

So I think that's an important piece to recognize because If you already have a familial history of autoimmunity, you're going to get pushed down that autoimmune disease pathway quicker.

Or if, let's say, you blew your ACL skiing and you've had issues with your knee ever since because of smoldering inflammation in the knee joint and breakdown of collagen, the infection's going to go there.

If you already had a disrupted blood brain barrier or a TBI, then you're going to have more of an issue there. If you already had a lot of gut issues, and you already have leaky guts, and there's excessive gut inflammation, or you have inflammatory bowel disease, you're going to have bigger issues there.

I really like what you said. You got my chiropractic backbone, no pun intended, excited in the fact that you talked about collagen. Collagen is great for skin, hair, nails, joint, gut.

So here you have a lot of people suffering from Lyme disease or vector-borne diseases and they complain about the joint. You may have just given an explanation because you say, look, you're losing the collagen, there's inflammation, and when we talk about the gut.

Therapeutic Lifestyle Foundations

So to wrap it up, how would you implement the therapeutic lifestyle into your patient's daily routine to help them hear from vector-borne diseases? Everybody wants to know, how do I fix this damn thing?

Boy. Well, I would say just from a lifestyle perspective, you can do a lot for your immune system by avoiding sugar, avoiding ultra-processed foods, really avoiding processed foods in general, avoiding seed oils, avoiding all of this pro-inflammatory food.

And then on the flip side, focusing on actually feeding your body, feeding your cells with nutrients, which is why we even eat food in the first place.

So simple things like eating a rainbow, making sure you're getting all of those phytonutrients that all of our cells and organs need in the body. that help with oxidative stress and help to fight inflammation, making sure that you're getting enough omega-3 fatty acids, enough EPA, DHA, getting enough monounsaturated fatty acids from things like avocados and olives, making sure that you are…

I could go down a rabbit hole with this controversy, but some of my patients don't get enough cholesterol. brainwashed that cholesterol is going to kill us and that cholesterol is bad for us.

And the reality of it is, is that our brain is what, like 70% cholesterol? We cannot make vitamin D without

cholesterol, which is a pro hormone. We can't make our sex hormones and our adrenal hormones without cholesterol.

Our cell membranes can't communicate properly without cholesterol. We need to make sure we're getting adequate protein. We need all of those essential amino acids that our bodies literally can't function without.

We can't make neurotransmitters. We can't structurally build our bodies or make the chemicals that run them, again, like neurotransmitters, hormones. on immune cells, right?

And then all of the micronutrients. People hear me say this over and over again, and they're probably so sick of it. But we're just a bunch of biochemical reactions.

So we take something, and we make something else using an enzyme. And guess what? All of those enzymes are dependent on various vitamins and minerals.

And if we're deficient in them, because the truth is our food is really Lacking you know we can't make those enzymes work and then we cannot build ourselves structurally or make the chemicals that run our bodies you know so a great example is the conversion of tryptophan.

All the way down to melatonin right there's so many different enzymatic processes that go from tryptophan to 5htp to serotonin to melatonin and if we don't have all of those micronutrients vitamins minerals that are needed to make those conversions we can't make our neurotransmitters.

And we have to make sure that we're feeding all of the super important microbiome bacteria in the gut that also help to manage our inflammation and our immune system depends on for proper functioning.

You just gave a plethora of great examples. of how to take care of yourself in a therapeutical lifestyle realm. What's most interesting, there's an overriding reach to what you do, which I didn't know because this is really the first time we've had the opportunity to converse.

I mean, what you just said says longevity. Yeah. Well, that's just the nutritional piece. We haven't even talked about toxins in the environment. or dealing with imbalance of the autonomic nervous system by resetting the vagus nerve and moving our bodies and exercising, just all of this fundamental basic work, that whether you have Lyme disease or you have a different chronic inflammatory infection or you just want to be healthy and age well, these things are so, so important because we live in a very toxic inflammatory world.

Without question, we do. So nutritional counseling includes gut repair, stress management, movement therapy, avoidance of toxins, mindset, longevity, overall health.

I gather you don't adhere to a specific diet as long as the food is healthy and it's real. 53% of the calories you consume comes from ultra-processed food.

X, let's not go there. Everybody, if they had one thing, I agree, take that away. I wholeheartedly agree with you. I concur in the idea of cholesterol is not the evil person.

There's a lot of history with that, you know, a 1966 study which was refuted in 2016 about fat, cholesterol, and sugar. Outstanding. However, in addition to therapeutic lifestyle changes, use botanical herbal medicine as your main means to medicinal treatment.

What's your approach from an herbal angle? I am now going to take notes because I am not an herbalist. Okay. So from an herbal angle specifically, I encourage, whether you are a patient suffering or whether you're a medical practitioner, don't memorize protocols.

So any condition that you sit down with, it's like, what is the goal? So if you sit down and look at what are your goals of treatment, you can then choose the herbs that are going to specifically cover these goals.

I'm going to start with the least important to me. And this is going to surprise a lot of people. So the least important role of an herb and part of my herbal protocol are actually the killers.

But it is important to include one or two killers. So we need to know what type of organism we're dealing with. Is it gram-negative or gram-positive? Is it a parasite?

Is it a virus? Is it a fungus? What is it? Because different herbs have different antimicrobial properties. And one of the reasons why I love herbs so much is if we're looking at an herb like, let's say, Cryptolepis or Sweet Annie, they are actually very well at dealing with both.

gram-negative organisms as well as parasites. And then cryptolepis itself is also very helpful when dealing with gram-positive organism. So a good patient that cryptolepis might be good at helping would be a child that has pandas.

So they have a strep infection that's chronic and won't go away. Typically, because of an underlying infection, let's just throw it out there that maybe that underlying infection is Lyme.

And now, Cryptolepis not only is going to be good for the strep, but it also is helpful with the Lyme infection, because it's anti-spirochetal. And the spirochetes are also gram-negative.

So it has that sort of overlap. And cryptolepis is also effective against the persister cells of Lyme. So number one, know what type of organism you're trying to kill so you can bring the appropriate killers on board.

Number two, know which cytokines the type of infection you're dealing with is exploiting. So with Lyme, we talked about nuclear factor kappa beta, the MAPKs, interleukin 6, interleukin 1 beta, tumor necrosis factor alpha.

So we can choose herbs that are good at shutting down those specific cytokines. And if you combine together Chinese skull cap and Japanese knotweed along with cordyceps, you can inhibit those exact cytokines that are used in a chronic Lyme infection by Borrelia or the Spirochete.

Then if we know how this infection lives, what does it eat in the body? Lyme, like I said, loves to eat collagen. How does it eat collagen? Well, it uses three enzymes, agrokinase, collagenase, and haluronidase.

Those three enzymes can be inhibited using a mixture of Chinese skull cap, Japanese knotweed, and ashwagandha. And now you're starting to hear redundancies, which is great, which means we don't have to use a ton of different herbs.

We pick the ones that we're hearing over and over again. So we protect the collagen and help to starve off the infection by inhibiting the enzymes that the infection uses to break down the collagen to make its food.

OK, then how does Lyme hide and evade the immune system? Well, it does it in a multitude of ways. One of the biggest and most important is behind biofilms.

So it creates these fort-like structures that walls itself off not only from the immune system, but from the medications that we're using to try to kill it.

Herbal Treatment Strategy for Lyme

So we have to bring in things that will help to break down the biofilm. I would say my top three favorite are Chinese skullcap, because I already use it for a lot of other things, grapefruit seed extract, because it is effective in breaking down the biofilm.

But grapefruit seed extract, there was also a study done that showed that it irritated the cyst form of Borrelia or lime. So it's effective in inhibiting that cyst formation.

And then also G3M, which is a product that I use that actually helps to decrease galactin 3 and break down the scaffolding or the structure of the biofilm.

And then, lastly, we want to bring that balance back to the immune system. So we want to balance TH1, TH2, TH17. Now, a lot of that's going to be accomplished by balancing those inflammatory cytokines using the Japanese knotweed, the Chinese skull cap, and the cordyceps.

But hands down, favorite herb for balancing the immune system is ashwagandha. And it's also so protective to the adrenal glands and helps to modulate cortisol levels.

Because when we have a chronic infection, not only do we have that adrenal stress and a lot of times that increase in cortisol, because we are physically fighting this long-term infection.

And by the way, cortisol can go downhill in the end. But also, a lot of these patients are stuck in that fight or flight. They have the autonomic nervous system in balance.

Because they're so misunderstood, they've been to hundreds of doctors. Maybe 100 is an exaggeration. But let's say definitely double digits. And a lot of them have been told it's all in their head, or they've been misdiagnosed.

And they can't get answers and deep down in their gut they know that they haven't received the right diagnosis and it's very isolating and what all of that does to the nervous system is just.

Perfect. So bringing in herbs that help to, sorry, I kind of went off on a tangent, but bringing in herbs that help to deal with that actually goes a long way to rebooting and resetting the nervous system.

And again, ashwagandha is just one of my favorite herbs for doing that. Ashwagandha is the game changer. So you spoke with the idea of your herbs, they're pointed at immune dysfunction, really being specific to which cytokine cascade and inflammatory marker, what's the organ of invasion, understanding the mechanism of further immune evasion.

I know you ensure all routes of elimination, IED toxication, which we're going to get into in a moment. But I thought you brought up a tremendous point.

I mean, it was a takeaway point in that many people are misdiagnosed with Lyme. They've been mistreated, unfortunately. They've been to double digit practitioners, like you mentioned.

I see the same thing. So it really begs the question, right in the middle of the podcast, what do they do? I mean, what do you do if you're that person that's been tested positive for the presence of a bacteria, not been tested for an antibody?

You could blown up on antibiotics. I would say the first thing to do in any of these situations is if the diagnosis doesn't sit right with you, listen to yourself.

You know your body, or if we're talking about a child, you know your child and your child's body better than anyone else on this earth. And if it doesn't sit right with you, you need to follow your own gut instincts.

ILADS, the International Lyme and Associated Diseases Society, is a wonderful organization. They have so much knowledge, education, support, resources.

You can find them at ilads.org. And then there's also the Medical Academy of Pediatric Special Needs, or MAPS, and they're MedMAPS, M-E-D-M-A-P-S dot org, if this is more of like a pediatric patient.

But I would start there and I would learn as much as you can. Beyond that, find a Lyme literate medical professional that really understands this and knows what they're doing.

And my advice is to find somebody that comes at this infection from a functional medicine standpoint. I've been through the gamut. I've been through referring out way back in the beginning of my career for triple antibiotic therapy.

And then I spent a solid five years doing integrative therapy. And now at this point, I treat solely with botanical medicine, so herbal medicines, and functional lifestyle intervention.

But I just strongly caution people to find someone that comes from the functional medicine integrative standpoint, at least. If you're working with someone, and I don't mean to offend anybody, but if you're working with someone whose soul focus is on killing these bacteria, it is a never ending, never winning battle.

These bacteria, and if we're talking about something like Babesia, that's a parasite, these stealth infections are so much smarter than any pharmaceutical medicine or even botanical medicine out there.

We can't just throw antibiotics and antiparasitics at this thing. We have to look at the individual person sitting in front of us or look at ourselves and get with someone that can help to explore the terrain Because I promise you, once these infections have become chronic, they have changed your terrain.

So I have this picture that my wonderful friend Carly Sage put together for me. It's a picture of an iceberg. And so this happens often. And this used to happen to me.

I get so excited when I found out that someone had Lyme or another vector-borne disease, because it's like, ah, there it is. There's the root cause. And it's like, those are only the tip of the iceberg now.

What it's done to the terrain, what it's done to the mitochondria, to the cell, to the microbiome, to the gut, to the brain, to the immune system, to the nervous system, to all of the different systems in the body are now the root causes.

And we're never going to be able to get to that tip of the iceberg and resolve these infections if we don't analyze and look at that terrain and heal all of that in the process.

Really great point about antibiotic to start, we're made up of mostly bacterial cells, 10 to 1. So we're killing ourselves before we get to what we had to.

And like you said, there's a mechanism, there's a sophistication to this particular pathogen. Also, the idea of the iceberg is great root cause resolution.

There's so much damage along the way. It's truly a complexity that's just not that easy. So you do need someone who's very schooled in the idea and had seen patients with Lyme disease.

But something that you do that's very unique that I noticed that's different than a lot of other practitioners is your usage and your testing for Galactin 3, which is a protein that causes a tremendous amount of inflammation and fibrosis and leads people down a biofilm path.

So why don't you take the baton and go with that? Sure. And you know what? I'll be honest, I don't do a lot of testing for it anymore. I just assume it's there.

If there's chronic self-infections, I assume it's there. And it's part of my i'm sort of like basic protocol and i don't mean protocol of take this take that i mean an approach you know we we have to deal with it so galactin three um is something that in an acute injury or infection is important It helps to recruit different immune cells and actually cytokines to come in and either kill the infection or heal the injury.

And then its levels are supposed to come down and the body goes back to normal. And what happens is that when it stays chronically elevated, Like you said it is part of the scaffolding or the backbone of biofilm formation which allows these pathogens to wall themselves off from the immune system and from the medications that are

commonly used to eradicate them but also It can cause, like you said, fibrosis and plaque formation.

It actually pushes a lot of these pro-inflammatory cytokines that we keep talking about, which is how it can impair T cell function. It can actually like shifting into that T helper dominance can cause impaired B cell function and inability to make antibodies.

And it also can lead to an auto-inflammatory or an autoimmune response and actually increased mast cell production in the body too, which then leads to a whole host of other things.

So so many negative implications from having this chronically elevated Galactin 3.

Gut, Liver, and Detox Support

Galactin 3 may be the bane of our existence in a testing mode, but it's typically there with most of the patients that are positive for Lyme. That said, I know you use a modified Citrix pectin, which is different than Citrix pectin because Citrix pectin is hard to absorb because the molecular weight is high.

It's a polysaccharide. Modified Citrix pectin has medicinal effects, and it is much more easy to be absorbed. It's actually a prebiotic. So why don't you explain?

Because that's not as common as it should be in functional medicine. Right. So this specialized form of modified citrus packed in does a lot of things.

So it actually is the one thing. And I'm not saying it alone is going to be a full treatment. It's not. But what I love about it is it covers all of my bases.

So number one, it helps to stop the breakdown of collagen, which can aid in starving off the infection. It helps to pull the fibrotic plaques out of the collagen and excessive scar formation.

It helps to decrease interleukin 1 beta as well as interleukin 6, which are two of the pretty stubborn inflammatory cytokines that cause the imbalance in the T helper branches of the immune system.

It increases natural killer cells, which are a subset of lymphocytes that the Lyme infection will typically decrease. It binds endotoxins, which can decrease the frequency and severity of a Herxheimer reaction.

And it also has the ability to bind mycotoxins. It binds heavy metals like lead, cadmium, mercury, and arsenic. And I feel like I might be forgetting one.

Gins. Yes. It can be helpful to heal the tight junctions in the gut. It's great to have the script in front of you, Doc. Sorry, full disclosure, I looked down at my show notes.

I apologize. Don't think I'm so smart. Interesting that you talked about all the litany of things that this particular nutrient can do, and it's a great ad.

There's an overriding theme I hear from you, and I'm excited about it because I'm all about the gut. It's not the only thing, but I do believe it's the epicenter, it's the bullseye of your health.

You've added a tear or branch to it, that gut to liver axis. Whatever you do to your gut, you do to your liver. Whatever you do to your liver, you do to your gut.

75% of your toxins come from your gut to your liver via the bloodstream. 25% go via the portal vein. The nerve that attaches to the portal vein is the vagus nerve, which I hope we can get into a little bit more.

That said, give me your rendition of what's going on in the gut to liver axis. Well, I think to talk about that, we have to kind of start more with just the gut itself, right?

And like the tube from start to beginning, right? That is our digestive tract. So, you know, most people realize the function of our digestive tract, right, for digesting food and absorbing nutrients.

But I think most people forget that it's actually kind of like a sewer system out of the body. So our lymphatic system is constantly dumping toxins into our gut for elimination.

And when we have excess inflammation in the gut, And especially, I forget too, it's like the separation between the inside of the tube, which is actually outside of the body, and then into the body is only one cell thick.

And it's like all of these little cells that are glued together picture like a single brick wall. And when we have erosion of that cement in between the bricks, which is the tight junction, we now start leaking back in.

not only these toxins that the body is trying to get rid of, but toxins that we are exposed to when we put anything into our mouth. So we have our hydrochloric acid in our stomach pouches is the first line of defense to kill things.

But then we have a lot of pathogenic bacteria that make its way down and is supposed to be eliminated. And when this stuff gets leaked in and gets into systemic circulation, Obviously, that's going to put a lot of stress on the liver to now filter and detox that stuff out.

But it also is going to lead to activation of the immune system and more cytokine production. And then we have more toxicity, more cell damage, more organ damage, more oxidative stress, and it just exponentially complicates the situation.

And then if that inflammation is impairing our body's ability to digest and absorb our nutrients properly, we're not getting in the basic nutrients that we need let's let's focus just on liver right to run phase one and phase two of the liver's detoxification systems and you know really beyond just supporting phase one and phase two it's actually coordinating the two so that they are kind of running at the same speed because during detoxification in the liver one of the most I guess dangerous parts of not being coordinated is building up those toxic intermediates.

So in between phase one and phase two, you can build up these toxins that are actually more toxic. Then the original toxin was before it went through phase one.

So I usually have a diagram to explain this, which makes it so much easier. So hopefully everyone follows along with what I'm saying. But picture two escalators running at the same speed.

So you go up one, you get off, you get on the next, and everything's nice and smooth. Well, if you sped up phase one, So now the escalator's going twice as fast.

You're going to have this buildup on the platform before you can get on the second escalator. And so that to me is how I picture these building of the intermediate toxins.

And then they cause more damage, oxidative stress, damage to the cell, to the mitochondria, to the body, et cetera. So again, getting the right nutrients in, like one of my favorites, N-acetylcysteine.

for phase one and for phase two, right? So we want to kind of coordinate the speed at which both phases run. And then we have to focus on elimination, because we can't have all the toxins build either, because we're not pooping, peeing, sweating, breathing correctly to expel all of these toxins out of the body.

Great. Just to recap, it's been stated that the gut is the outside part of the body. It's the first time something meets the inside world as it goes through the gut.

It is your first line of defense in your immune system. Great. And then when it passes through your gut and gets into your blood system, that starts the adaptive and the innate immune system, et cetera.

Great. Bifunctionally modulate the liver. I'm going to use my hands. Typically, phase one is up here. Phase two is

over here. That little fall between the two, the disconnect is where that reactive oxygen or that reactive intermediary goes, which is a secondary tissue attack.

Ladies and gentlemen, you just got a great dissertation. That's years and years of work from gut to liver. So people are going to ask, all right, I've got this thing called Lyme disease.

What's your protocol? And I know when you say a protocol, it's a starting point, it's a recipe. It's like when I say, honey, what's your protocol to my wife for my organic brownie?

Well, she takes the sugar out, she puts in allulose, she takes the chocolate out, she puts cacao, and it's the greatest thing because she beats Bobby Flav in any cook-off, in any baking contest.

Now, that said, here you go. Everybody wants your protocol. Oh, boy. All right. So I'm going to make it super simple, super quick if I can. So number one, you want to do the background work.

So we want to look and make sure, do you have all of the micronutrients that you need to basically run all of the biochemical processes in the body? So I love doing an intracellular or inside of the cell nutrient evaluation for all of the basic vitamins, minerals, essential amino acids, essential fatty acids.

Number two, I like to look at IgG and IgA food sensitivities. I want to make sure that even the healthy foods that we're eating are not pissing off our immune system.

If our immune system is busy fighting the foods that we are eating, we are distracting it, and we're wasting immune resources on the one thing that I would argue we can actually keep out of our body.

we can choose what foods we put in. Additionally, if those foods, when they are stimulating antibody production, are then causing inflammation, it feeds into that whole process that we've already talked about.

Then we need to know, what is actually going on in the gut? What is the intestinal permeability in that particular person? And we could talk for an hour on the interventions to fix that.

But let's just say we need to know if it's there, to what extent it's there. And then there are a handful of things that we can do to try to heal those tight junctions.

Then we need to make sure that all of the routes of elimination are working. So are we having daily bowel movements? Are we doing deep breathing exercises to off gas toxins?

Are we sweating out toxins? Are we having an appropriate intake of water and salt? I'll try not to go off on a tangent, but you need salt to absorb the water.

for proper hydration along with other electrolytes.

Lyme Protocol, Rapid Fire, and Closing

And so once that is kind of all set, there's some overlapping, like doing the micronutrient assessment, then also will tell us, do we have the nutrients that we need to do all of the other biochemical reactions in the body, like make immune cells, make neurotransmitters, make hormones, et cetera, et cetera.

Then we want to look at the microbiome. Do we have overgrowth of other opportunistic bacteria because of the immune suppression? Do we have enough healthy bacteria?

Because again, that healthy bacteria is going to kind of decide if we're making excess inflammation or if we are combating inflammation. And let's not forget that 90% of immune function is literally in our gut.

because of the gult, the gut-associated lymphoid tissue, but also because of that microbiome. The microbiome is

hugely important. We then need to know, do we have other viruses because of the immune imbalance have now overgrown and are playing a role?

Do we have an overgrowth of candida and other fungal microorganisms because of excessive antibiotic use or just because of an immune imbalance? Does the patient have SIBO?

Does the patient have chronic UTIs? Does the patient have H. pylori? What other microorganisms are now playing a role because of this immune incompetence?

And then once we have a good handle on that, We have to support, like I said, detoxification and elimination. We have to break down the biofilms that all of these organisms are living behind and sharing their information to live synergistically in the body.

And then we have to attack these organisms with the appropriate antimicrobials. So I do have a 10b protocol that I put together that outlines all of this.

And it's the background check, which is all the fundamental functional medicine stuff. It's using Band-Aids as step two, if necessary. A lot of my patients come in.

so unfunctional, so unable to just live out daily life that sometimes we have to do band-aid medicine. They might need support from a psychiatric perspective or from a pain perspective.

Then we get into blocking the inflammation. So we have to block the Galactin 3, block the inflammatory cytokines, block those inflammatory enzymes, and get the inflammation out of our environment and our foods.

We then have to buffer step four, the stress on the autonomic nervous system, stimulate the vagus nerve, bring the ANS back into balance. We then need to balance the immune system.

We need to build the gut or rebuild the gut. We have to break down the biofilms. We have to bolster detoxification, step eight. bind endotoxins, step nine, and then lastly blast the bugs.

And again, when we're looking at blasting the bugs, kind of going through those steps in knowing what infection or often infections you're dealing with so that you can choose the right herbal protocol to eliminate the infections without causing further damage to the gut, to the microbiome.

And again, it's like this crazy miloo or ball of wax, but all of that then leads to more toxicity, oxidative stress, et cetera. So that's really why when we're focusing on blasting the bugs, I rely on herbal medicine as opposed to pharmaceutical antibiotics and antiparasitics.

which a lot of times will cause issues with gut health and really impedes our ability to restore proper gut function, which impedes our ability to do my number one goal, which is rebuild the immune system.

Wow. I don't know where to start with that. So I'm just going to say that was a extensive corticopia of different spices different herbs and everything to use and that was great.

People can listen to it a couple of times. We're running out the clock. So now I'm going to do something that's very New York style. It's called rapid fire.

So get ready. All right. Here we go. Is a bullseye pattern always present in Lyme's disease? No, less than 40% of patients with Lyme develop the EM rash or any rash at all.

Can Lyme disease lead to mitochondria dysfunctions, which could be the reason for fatigue? Absolutely. Lyme's disease having an effect, it's a quick question, on the brain.

If I have brain fog, I have memory problems. Concentration problems could be attributed to Lyme's. Absolutely.

Cognitive dysfunction, impaired short-term memory, inability to follow instructions, ADHD, all of that.

I have a lot of patients who have been diagnosed with dementia and Alzheimer's that have underlying vector-borne disease as one of the root causes. And then on the flip side, talking about the brain, so many neuropsychiatric disorders are caused by Lyme and other vector-borne diseases, especially Bartonella and especially in children.

Anything that affects the gut, affects the brain. We know it's bidirectional, anxiety and depression, been attributed to that. That vagus nerve, we know it's critical because vagus nerve, they have a hypothesis now, vagus nerve, infectious hypothesis.

If the tone is down on the vagus nerve, it could be literally carrying the bacteria from the gut to the brain, something that I think in part two, we need to talk about a little bit more.

A lot of people are going to want to know how to get in touch with you. Can you tell me what you're up to and how they can get in touch with you, the classes?

I mean, you do a lot. People always say, hey, Rob, you're busy. You may have me beat young lady. Well, thank you. OK, so my clinical practice is in Hebron, Connecticut.

It's called Tau Center for Vitality, T-A-O. You can go to tauvitality.com, or you can call 860-228-1287. I also am starting a podcast next month, so you can look out for that.

That is called Lime Bites. And in addition to the podcast, I am putting together educational courses on all various vector-borne diseases and how to treat them from a lifestyle functional medicine, naturopathic medicine perspective.

And we have the annual Lime Bites Symposium, which is November 14 and 15. This year, it is on Pompano Beach in Fort Lauderdale, Florida. And that is going to be an in-person as well as a virtual conference.

And then if you need any support or looking for tested herbal medicines, you can check out Lyme Core, which is my botanical medicine company that I started to help treat patients with vector-borne disease.

Outstanding. It's been my pleasure, Mariah. You are truly a treasure. I appreciate all that you shared in the world of Lyme. I just don't know what to say.

This has been a great 50 minutes. Thanks so much for your time. I look forward to seeing you soon. Everybody, there she is, the Queen of Lyme. Thank you so much.

Thank you. It's been an honor to be here with you. Rob Silverman, Proven Health Alternatives.