

[199: Resiliency Radio with Dr. Jill: The Role of the Gut in Mold Toxicity with Dr. Pejman Katiraei](#)

00:13

Dr. Jill: When I really knew something was wrong was when I started having trouble walking up the stairs. I was supposed to be grateful and happy and healing and well and thriving, but I did not feel that way. I was so sick. Like always, I wanted to find an answer, and I had to figure it out. And I had to figure it out to save my own life. So I dove in.

00:38

James Maskell: Jill is the leading voice in biotoxin illness and chronic conditions that are driven by toxicity.

00:43

Bree Argetsinger: Oh my gosh, you're dealing with mold? You have to work with Dr. Jill Carnahan.

00:47

Patient 1: Dr. Jill is the first person that actually began to shed some light on the problem.

00:53

Dr. Jill: What I do is listen to the patient, and we together talk about what else is possible.

00:59

Patient 2: I don't know why I'm crying.

01:02

Patient 3: She saved my life.

01:06

Dr. Jill: The deepest lessons and most profound insights come in the suffering, come in the dark moments. Self-compassion is the healing

transition that shifts something inside of us. It's actually the thing that we need most in order to heal.

01:26

Narrator: *Doctor/Patient*—available now at DoctorPatientMovie.com.

Dr. Jill 01:36

Welcome to *Resiliency Radio*, your go-to podcast for the most cutting-edge insights in functional and integrative medicine. I'm your host, Dr. Jill, and with each episode, we delve into the heart of healing and personal transformation. Join us as we connect with renowned experts, thought leaders, and innovators at the forefront of medical research and practice, empowering you with knowledge and inspiration and aiding you on your journey to optimal healing.

Dr. Jill 02:02

Guys, I don't know if you heard yet, but if you haven't, our movie, the documentary *Doctor/Patient*, is now out and available for rent, purchase, sharing, or gifting. This has been a huge heart project for the past three years—getting the message out about what it is to delve into the heart of suffering and illness but also find strength and resilience in that process. So if you want to hear more, listen, or even just watch the trailer, go to DoctorPatientMovie.com. And let me know your thoughts after you watch the film.

Dr. Jill 02:35

Okay, so on with today's episode. Today, I am so excited to talk about one of my favorite topics with a wonderful, amazing guest. We're both part of a group called ISEAI, the International Society for Environmentally Acquired Illness. And I just want to say he recently put out an incredible webinar on mold, the gut, and mast cell activation. I watched it, and I thought: "We have to have him on the podcast!"

Dr. Jill 02:59

Dr. Pejman Katiraei—Dr. K, we'll call him—is a board-certified pediatrician who completed his undergraduate at UCLA and then obtained his osteopathic medical degree at Western University. He completed a pediatric residency at Loma Linda University, where he stayed on as teaching faculty for over four years. Dr. K has also

completed two fellowships in integrative medicine and has over a decade of clinical experience helping children with severe learning and behavioral challenges.

Dr. Jill 03:27

He feels we must do more to help all of these children who are struggling—I couldn't agree more—and this is why he helped found Wholistic Minds, an AI holistic assistant to empower an army of healthcare providers to help families find and treat the root cause of complex chronic illness.

Welcome, Dr. K!

Dr. Pejman Katiraei 03:45

Thank you for having me. It's really a pleasure to be here!

Dr. Jill 03:49

It is such an honor! And like I said, I watched this and was like, "I have to talk to this guy!" We haven't officially met in person, but we run in the same circles. I've seen your name on the boards and you always have insightful and important information. And I love your passion for children because so many of my patients—if they're in a moldy home, the whole family's affected, right?

Dr. Jill 04:07

Before we dive into mold, children, and the gut, let's just talk a little bit about you and your story. I'd love to hear: How did you get into medicine? And then, how did you get into a more integrative approach to medicine?

Dr. Pejman Katiraei 04:21

Medicine—it's been an interesting journey. In undergrad, I realized that I was good in the sciences. I like helping people, so I figured naturally: "Well, what would you do other than medicine?" I started the osteopathic school because the more holistic, whole-body approach resonated with me. Two years in, I—even with osteopathic medicine—felt really disheartened by what I was learning, where it was all very mechanical kind of models. As a second-year medical student, you don't really know why you are struggling. But long story short, I started thinking, "Gosh, maybe I shouldn't be in medicine" and [that I should] go into [something] like healthcare administration or other things. And then I discovered pediatrics. I

absolutely fell in love with the kids. And to this day, they're still magical to me, 20 years or so later.

Dr. Pejman Katiraei 05:17

But in the midst of that, I went into pediatric residency and I was really trying to figure out where my future would be. My program director was like: "Hey, why don't you try this holistic medicine stuff? Maybe it'll resonate with you." The second I came in contact with it, I was absolutely and instantly in love. And that was—geez—2004/2005. Since then, it has been an ongoing passion and love to learn more and, ultimately, why you're doing what you do—to help more people find health and lead healthier lives.

Dr. Jill 05:58

Yes. What an amazing story. It so resonates. And so many people I've asked that have been on the podcast are so similar in the sense that if you're a true healer and, at the heart, you really, really care about people's well-being—and that's kind of why you go into medicine—then our conventional system lacks a little bit because we have drugs and surgery and it's more like a prescriptive "here's this." But it's not that real deep connecting with people. I always say it's like that trajectory and all of a sudden, someone turned a corner and went into illness. And as detectives, you and I say, "Why did that happen?"

Dr. Jill 06:29

And I love pediatrics. There is no truer healer than someone who works with children, because you have to have a special gift. So in that, I honor your story. I honor what you're doing. And it's so important in the realm of complex chronic illness.

Dr. Jill 06:48

Before we dive into mold, I feel like what we've seen is this exponential increase—even before the pandemic and for sure since that time—of more complexity, more chronicity, and more illness. And even in children. What are you seeing as patterns or things in the children that you see as far as the kinds of illness, the complexity, and the background of what you're seeing?

Dr. Pejman Katiraei 07:11

You're absolutely spot on. It was two years ago that a bunch of colleagues—we were all reaching out to each other, like: "What is going on? There are so many more kids who are sick. There are so many more kids who are struggling." We're seeing higher rates of A-to-B allergies and autoimmunity. But there's also a lot of kids—it's really turning into an epidemic of learning disorders, behavioral disorders, and autism. Sadly, everywhere you look, you find one or multiple kids who are struggling with something.

Dr. Pejman Katiraei 07:48

It's disheartening because it's almost like it's become normal now for kids to have something. It's like, "Oh, yes, my kid has ADHD." One of my close friends from college—just a week ago, he was like: "Yes, we were so relieved that he didn't get the autism diagnosis and that he just has ADHD." In that moment, I was like: "My God! Like, what world do we live in where a parent celebrates that their kid isn't autistic but they have ADHD?" I think that's the reality. My daughter is seven—she's in the first grade—and in every classroom, there are one or multiple kids who have some kind of learning disability. We've just come to shrug our shoulders and say, "That's just how things are." And it's sad.

Dr. Jill 08:42

Yes. Wow, that frames it so well because I always say the elephant in the room is the environmental toxic load. I think what's happening is that, subtly, these smaller bodies are taking a much bigger hit when we have mold in the environment or chemical toxicity. I know, as I delved into even the Colorado water supply, [that] there are PFAs, which are polyfluorinated compounds. All of a sudden, all of our water supplies are testing for [levels] higher than the legal limits. These are permanent, forever chemicals, which means 50 or 100 years down the road, we're still going to have them and probably more. So our environment has a huge impact. Do you feel like that's part of the reason we're seeing so many issues in children?

Dr. Pejman Katiraei 09:24

For sure. For sure. It's become the perfect soup. You add some COVID on top of it and then you add mold exposure or whatever else. It's the straw that breaks the camel's back. And for each of these kids, there's a different straw. It's sad.

Dr. Jill 09:41

So how we got talking about this and our topic today is the gut and mold toxicity and how that all connects. And like you said, you are probably seeing more and more. For me, when I realized what mold was and how it affected us, it was such an 'Aha!' Then I started to view that lens as I saw patients. I was shocked at how many of my patients had presented with autoimmune issues, cognitive issues, or definitely kids with ADD or behavioral disorders—there was mold underlying that. How did you get into the world of mold? And how often do you see that playing a role in the kids' behavior, learning disabilities, or issues like that?

Dr. Pejman Katiraei 10:18

How I got into it (this was about five or six years ago) [was that] I had this one patient, a beautiful—I think he was eight or nine at the time—boy who had a severe, severe case of PANS and PANDAS. Extreme aggression. Extreme anxiety. Really off-the-charts issues. We tried everything you can possibly imagine. Nothing worked. The mom was the one who was like, "Hey, what do you think of this mold business?" I was like: "I don't know. I don't think it is. But sure, let's look into it." All my stuff has failed; who am I to say it's not?

Dr. Pejman Katiraei 10:57

We did the urine MycoTOX [test], and it didn't look terrible. But she kept persisting. She was like: "I found this guy, Neil Nathan, who does consultations. Are you okay doing a consult with him?" Again, "I have no clue what the heck is going on. If he could shed some light, why not?" And that was my first introduction to Neil. He heard the story and heard the case. He looked at the results, and he was like, "Oh, for sure, this is mold." That's when my eyes bulged out for a second. I was like: "What are you talking about, man? The test looks normal."

Dr. Pejman Katiraei 11:33

Long story short, they tested their home. The levels of mold were so astronomically high that the conventional inspector—he wasn't even a fancy specialized one—was like: "This place is heavily contaminated. You need to leave." It was one of those stories where mom packed their clothing, left the house, and moved into a rental literally overnight. And that's what started opening my eyes up to this.

Dr. Pejman Katiraei 12:01

It's terrifying how common it is. Probably about two years ago, I got to this point where I thought I was losing my mind because it was like: "It's not possible for there to be this much mold. It's not possible for this many patients to have it." And I reached out to Neil. I was like: "Neil, am I losing my head? Is it that I'm going crazy or is this real?" He was like: "No. Welcome to my world. This is real." It's staggering. You know it better than anyone. It's everywhere!

Dr. Jill 12:33

Yes. Wow. You so parallel my experience because I had my personal experience in my office. We had a flood in Boulder. I got massive mold exposure. I was having symptoms. I finally found out that it was mold. Then I went on the journey to try to heal myself, and in the process, I was like: "Oh my goodness, this is a major issue." Knowing that framework and seeing that, just like your one case, all of a sudden you start to open your eyes to: "Oh, could this be involved in these other cases?" What I started to see was [that it was] over and over and over again. I was so careful because I wanted to remain objective and not bring my lens to it. But the truth was, I would be like: "Oh, this can't be mold again." Then I'd do the testing, then I'd do the story, and then we'd do the environmental testing. And it was so clear—it was mold. And they got better when they got out of the mold. And I kept being, just like you, like: "Am I crazy? Is this really real?"

Dr. Jill 13:18

But the truth is, as we open our eyes—and you and I both are in this organization that tries to get other physicians to be aware of this—one of the reasons I do the podcast is because it's so common, isn't it? It's sad and shocking. The truth is, we as physicians can help the body, but if they are in an environment where they're swimming in toxic soup and there's a massive mold exposure, there's no amount of supplements, diet, or medications that's going to take care of it, is there?

Dr. Pejman Katiraei 13:42

No. If you're being exposed to constant, high levels of toxins, then it's difficult. There are some techniques that I've found to be helpful for mild to moderate cases. But in severe cases where it's like off-the-charts levels, those are cases where you can't get people better.

Dr. Jill (pre-recording) 14:04

Hey, everybody. I just stopped by to let you know that my new book, *Unexpected: Finding Resilience through Functional Medicine, Science, and Faith*, is now available for order wherever you purchase books. In this book, I share my own journey of overcoming a life-threatening illness and the tools, tips, tricks, hope, and resilience I found along the way. This book includes practical advice for things like cancer and Crohn's disease and other autoimmune conditions, infections like Lyme or Epstein-Barr, and mold- and biotoxin-related illnesses. What I really hope is that as you read this book, you find transformational wisdom for health and healing. If you want to get your own copy, stop by ReadUnexpected.com. There, you can also collect your free bonuses. So grab your copy today and begin your own transformational journey through functional medicine and finding resilience.

Dr. Jill 15:00

Yes, which is why it's so great to have these groups and these people who understand it to share. And Neil has been leading the way too. So let's talk about the gut because, again, where I got connected to you was this phenomenal lecture you did on: Is the gut really the root? And I love that because it's so true. In my clinical experience, I see that mold causes massive permeability. That's our interface with the immune system. But do you want to dive into maybe giving the layperson who doesn't understand that connection, why is mold connected to gut dysfunction? Why does that affect the immune system? And maybe give us a little framework to put this all together [in terms] of how mold affects the gut.

Dr. Pejman Katiraei 15:37

Sure. I think a good starting point is to contemplate where penicillin and, frankly, all of our antibiotics came from: They're all derivatives of mold and mold toxins. Penicillin came from *Penicillium*. It turns out that most of the mold toxins that we have out there have direct or indirect antibacterial properties, which makes them exceptionally good for disrupting the microbiome and all the bacteria in the gut.

Dr. Pejman Katiraei 16:15

What is also really interesting to look at is this rather large body of information that shows us how the mold toxins and the molds themselves can trigger very weird inflammatory responses, especially within the gastrointestinal tract. One of the things that makes it even more troubling is that it's not just if it goes down this tube that we call our mouth; when we inhale these toxins, they go into our systemic

circulation via the blood. It turns out, from the inside out, that these toxins can go from the blood in from the inner lining of the gut. And that can trigger an inflammatory response within the cells of the gut.

Dr. Pejman Katiraei 17:02

That inflammatory response essentially sets off this cascade of events that causes inflammation, which causes leaky gut. The more leaky gut you have, the more inflammation you get. And you essentially get this vicious cycle of inflammation, dysfunction, microbiome disruption, and all kinds of other weird things that essentially cause this perpetual loop that has no end. If there's a 30-second summary of that presentation, it would be that.

Dr. Jill 17:34

Wow. You did a perfect job of illustrating because it really does massively affect the gut. And I'm assuming that you find, especially with your pediatric population, that if you start with the gut, you're often going to get a lot of traction in a mold-related illness case. So maybe we can talk about, where do you start with this?

Dr. Jill 17:52

I just want to comment because maybe people are still not understanding. We have this microbial population that has more DNA in the microbial contents than our own DNA. So the composition—the types of bacteria and good guys and bad guys that we have in our gut—has a profound effect on our heart, our brain, our immune system, and every single system in our body. So when Dr. K here is talking about how this disruption happens, the gut is the ground zero for the whole body. And maybe explain a little, because I'm sure you've seen this with kids: When you decrease diversity and all of a sudden you kill off some of the good guys with that antibiotic effect, what are some of the things that can happen? Overgrowth of yeast or overgrowth of other bacteria—that can cause issues, right?

Dr. Pejman Katiraei 18:36

Yes. An analogy that I give for families to help contextualize this is that gut bacteria are communities. It's like having a small community of people where 99% of the people are good, loving, law-abiding—just good, good people. And then you've got the 1% that are the bad actors. They've got a few too many tattoos. They've got some stuff. They have violent tendencies. But because of the 99%, that 1% doesn't

act out. When there's some kind of disruption—and the 99%, let's say, drops down to 80%, and now the 1% is more like the 20%—these bad actors suddenly have the ability to cause tremendous disruption within the community. So now they're looting, they're breaking in, they're setting fires, and they're doing these things. This dysbiosis, this imbalance of the communities, is really where the heart of these issues comes from.

Dr. Pejman Katiraei 19:46

As Dr. Jill pointed out, one of the things that's so fascinating is that we all have Candida in our guts. It's a normal part of the makeup of everyone's gut. And normally, Candida—this is just one example—is a non-actor. It sits there quietly. It's like the quiet little puppy that you pet, and it's nice. It doesn't act up. It just sits there. When the community gets disrupted, the same puppy now turns into this rabid dog that is trying to viciously attack everything. It goes through a morphological change. It changes its shape, starts spitting out these hyphae, and becomes invasive, meaning it tries to start digging into the gut to ultimately get into us. In the process of the Candida and multiple other microbes changing their behaviors, they start causing all kinds of dysfunction, distress, and inflammation within the gut, which then further causes issues.

Dr. Pejman Katiraei 20:51

What's amazing—and I'm sure you've talked about this before—is how these microbes, these fungi, and these bacteria are sensing their environment. They're sitting there quiet, quiet, quiet until, like: Ooh, this is my opportunity to cause a bunch of mess! And that's when they start changing.

Dr. Jill 21:08

Yes. Wow. I'm just listening to you with enthrallment because you've got such great analogies in this. I can see how you'd be such a great pediatrician because even the kids can get what you're saying here, like "the good guys and the bad guys." And it's so true.

Dr. Jill 21:21

Candida—let's just pause here a little bit. In conventional medicine, there's systemic sepsis from Candida, which is pretty rare in the ICU. But we don't really talk about it, right? I've seen it in my practice. I'll just tell a quick personal story from years

ago. With cancer and then Crohn's disease, one of the biggest factors of me completely recovering from Crohn's was treating the massive fungal dysbiosis that I had. It was something no one talked about or taught me until I realized it for myself. And now I check those antibodies, and I see—especially in Crohn's and Colitis and definitely in kiddos who have dysfunctional behavior, cognition, or mood—that Candida is a big deal! How do you test or find out if that could be an issue? Is it clinical? Do you use some testing? And how often do you see that yeast overgrowth as a big issue in your kiddos?

Dr. Pejman Katiraei 22:13

I love where you're going. I would say it's probably at the heart of where most of the children's issues come from. I would expand out from the Candida to the entire fungal makeup of the gut—the entire microbiome. When that goes out of balance, that, I believe, is one of the root causes of a lot of the issues that we see, from behavioral issues... I'm working on a paper that talks about how that may ultimately be at the heart of part of what we call autism. So yes, it's a big deal.

Dr. Pejman Katiraei 22:51

Testing is difficult. And I'm sure you've seen this in some of your patients: Sometimes it's clear-cut. You test antibodies, and it's like, 'Voila!'—the antibodies are positive. Or you do these organic acid tests, and the markers are screaming off the chart. There are also times that I've seen—especially in children—all of these tests fail, at least at the first go. And really, it's just this clinical judgment: "God! This child was exposed to mold." Their gastrointestinal tract is a big, hot mess. They've got all kinds of sensory issues, anxiety, sleep disruption, appetite changes, and pickiness, which suggests that their gut is a distorted mess. Sometimes I just have to work with the family and start treating. And then, when we retest, certain markers have now gone off the charts. But that's the sad thing. There isn't one test that's 100% accurate all the time. Sometimes the tests can lead us; sometimes they mislead us.

Dr. Jill 23:59

Yes. I love that. I love that you're seeing that because I have seen the same thing for decades. It's so interesting because it was through my personal experience that it was like: "Oh my goodness, this is at the heart of so much of my illness." And once I

really got that under control... I don't have Crohn's anymore. That's considered incurable, right? But it's because I dealt with the fungal burden.

Dr. Jill 24:19

And it makes sense. I'm just going to, for a moment, talk Crohn's and Colitis. There are panels on a conventional lab like Quest or LabCorp. It's an IBD panel. And you know what it is? You know this as well as I do: It's antibodies to certain types of yeast, and it indicates the severity of the illness. So even in the conventional system, although they don't acknowledge it, there's a clear-cut, researched, and founded connection to the fungal overgrowth. It ultimately can come down to clinical because we can do those antibodies, we can do the organic acids, and the stool will get the colon, but if it's in the small bowel or elsewhere in the body, we'll miss it. And I think some of the things we see are these weird species like *Rasutoria* or even species like *Aspergillus* that aren't coming up in a culture. But I couldn't agree more. And I love that you're saying that because, sadly, even in our functional friends, a lot of people aren't looking for fungal dysbiosis. And it is so prevalent. It's so prevalent with mood, inflammation, and behavioral disorders.

Are you typically starting with herbal types of treatments or are you using nystatin or fluconazole? Where do you start with kiddos?

Dr. Pejman Katiraei 25:28

One, I honor the families. If there's a family that's like, "I just want to use natural herbals," then it's like, "Okay, that's what we'll do." I find most of my kiddos who are really sick or sensitive don't do well with herbals, at least in the beginning, because the mechanism of the antimicrobial effect is so broad. The herbals don't just affect *Candida*; they affect the entire microbial makeup. There's an herbal blend called Biocidin that I'm sure you're familiar with that has a bunch of different essential oils and botanicals. There are some kids [with whom] even one drop of Biocidin will cause them to go completely bonkers—high anxiety, aggression, and sensory issues off the charts.

Dr. Pejman Katiraei 26:14

What I've started doing in the last year or so is that a lot of times I start with nystatin because it's the least potent and the least effective of all of the things out there, including the botanicals. It allows me to gauge how sensitive or tolerant a

child's system is. If a child tolerates nystatin, easy breezy—you bring them up to a dose. They're doing great. Everything is fine. Then you can layer in the next thing, whether it's a botanical... Or you go to fluconazole. And then, ultimately, what I've found to be really helpful for these kids is itraconazole. That seems to be because *Aspergillus* is showing its ugly face in the gut when it shouldn't.

Dr. Jill 27:00

Yes. I couldn't agree more. I have come to really love nystatin in adults and children. The antibiotics—we're taught bacteriostatic and bactericidal. Bactericidals are the killers; bacteriostatics are the stunners. In the fungal world, nystatin—if we say fungistatic versus fungicidal for fluconazole, in my mind, that's how I kind of think of it. I feel like the nystatin really pushes it down, but it doesn't eradicate it completely. But then, on the other side, it's so safe. It's nonabsorbable. It's safe in newborn infants with thrush. So we can use this very, very safely in adults and children. There's no liver effect. And because of that, you can use it a lot longer. And some of the greatest successes I've had are keeping them on for months, if not even a couple of years, on nystatin.

Dr. Pejman Katiraei 27:48

Wow! I haven't been that patient. I love that idea, though—to just go slow and steady for a long period of time and let their systems recalibrate on their own. That's brilliant.

Dr. Jill 28:04

Well, we keep learning from each other. That's why I get to learn from you too. The connection between mold and fungus is usually that mold weakens the immune system. You so eloquently described [how] it changes the good guys bad guys ratios and things. So what we're talking about now is fungal overgrowth that can often come in many different situations but for sure in mold. But what about mold's direct effect on the gut? You mentioned the inflammation and the damage. Maybe just describe that briefly. And then where would you go with clients, patients, and kiddos with treatment of the leaky gut and that inflammatory response?

Dr. Pejman Katiraei 28:44

Mechanistically, there are these cells in our gut called mast cells. These mast cells are one of the surveillance, if you want to say, immune cells, whose job it is to make sure nothing funky is happening. It's like the security guard that's constantly

roaming the perimeter. And it's not just the mast cells; there are other ones. But there are a lot of mast cells in our gut. Molds and mycotoxins happen to be very irritating to these mast cells. It's like having the worst irritating person you can possibly imagine for that security guard that causes them to go completely nuts. When the mast cells get irritated, activated, they start triggering other cells within the gut to cause inflammation.

Dr. Pejman Katiraei 29:33

And all of it is like: Hey, alarm, something funky is going on here; something funky is going on. And then, the more immune cells show up to try to fight this funkiness that's going on, the more damage they cause to the gut, [and] the more leaky gut we get. And then, at that point, the bacteria, the food proteins, and all kinds of other things join in on the party because that fence that was supposed to be nice and tight to keep everything on the inside of the gut is now broken. And all this stuff is moving past the fence to where the defense layer is. The defense layer is now launching an attack on all of this stuff.

Dr. Pejman Katiraei 30:11

At that point, it really becomes this awful chronic cycle where food proteins, bacteria, and lipopolysaccharides—which are essentially compounds that the bacteria release into their environment—get into it. And then the immune system is like: We've just got to wage war because the entire barrier is gone, and we need to keep the body from dying—because when the gut completely falls apart, we get what's called septic shock. Stuff comes in [and] ends up, heavens forbid, infecting other organs. And that's not a good thing for us. So the body invests a tremendous amount of immune force to protect itself within the gut. But that then causes even more damage, and that damage perpetuates everything.

Was that a decent explanation?

Dr. Jill 31:05

That was brilliant! Brilliant! And then, what do you do? We talked about the fungal overgrowth and those things because you really want to take care of some of that first. But what would be some of the steps that you might recommend for a patient with leaky gut from mold?

Dr. Pejman Katiraei 31:22

A while ago—this is what kind of led me down this road of understanding the gut—I kept looking at some of my patients and asking, "Why the heck can't I fix their gut?" And I'm sure you've had this experience where I would do the immunoglobulins, do the elimination diet, put them on probiotics, put them on all these things, and their guts would just not heal. That's when I had this 'Aha!' moment of: "Oh, my God! This environmental exposure, plus what's going on with the fungal imbalance in the gut, is where this triggering, driving force comes from."

Dr. Pejman Katiraei 32:00

The thing that I've added to this regimen are these bacterial endotoxins—the toxins that these bacteria produce. What I've started realizing is that when there's a disruption, these bacterial toxins also start entering the gut. Mast cells and certain immune cells in the gut have these toll-like receptors (TLRs). These are like little antennae or sensors that are there scoping things out to see what's good or not. It turns out that these TLRs happen to be very sensitive to these bacterial toxins. And they start triggering these receptors to activate these cells, which then furthers the inflammation.

Dr. Pejman Katiraei 32:45

What I've started doing is, first, making sure the environment is controlled. So whether someone has to leave a home or remediate—sometimes filtration is enough to just control the issues, the exposure—I start using nystatin or other things to bring down some of the fungal burden because that's driving it. And then, on top of that, I'll use various things to bind or prevent these bacterial endotoxins from going in. I found that combination is usually enough to start calming down the immune response.

Dr. Pejman Katiraei 33:21

Serum-derived immunoglobulins (SBI), like SBI Protect or Mega IgG2000—it turns out that these immunoglobulins are awesome not just for preventing leaky gut but [also] preventing these bacterial endotoxins from getting in. Fish oils happen to be really good. I use chlorella sometimes for that kind of binding effect. And then, if you look at a lot of the binders that we have attributed to benefiting mold toxicity—cholestyramine, Welchol, bentonite clay, activated charcoal—it turns out

that all of these binders happen to also be really good at binding these bacterial endotoxins.

Dr. Pejman Katiraei 34:07

One of the questions that I don't know if we have an answer to is, when we use these binders and people get better, is it because we're reducing the mycotoxins? Is it that we're reducing the bacterial endotoxins? Or, both? So we don't know. But it's not so much the tools; it's the way of thinking about it that's really changed for me. And it's coming at it from like: Okay, we've got the fungal imbalance, we've got the bacterial toxins irritating the gut, and then we've got the gut that's irritated itself. So what are clever ways where we can reduce these exposures—and then on top of that, if there are parasites or food allergies, obviously we want to take care of that—and then find things that can help improve the gut?

Dr. Pejman Katiraei 34:56

Another example is quercetin. A lot of people use quercetin because it helps with mast cells. What most people don't look at with quercetin is that it's awesome as a prebiotic. It starts improving the bacterial makeup. It starts reducing leaky gut. And there's one study that I found that suggests that it can also help prevent some of these bacterial endotoxins from coming in. It's almost like repurposing the tools that we've always had. And it's thinking about it a little bit differently to ultimately just get things to move better.

Dr. Jill 35:32

This is what I loved about your presentation. So LPS endotoxemia—that's the bacterial toxins you're talking about. We know now that binders are also binding those. If you look at the research—and I'm sure you've seen this as well—it is at the core of all of our cardiovascular disease, our diabetes, our obesity, [and] any metabolic dysfunction. And this is escalating. I think one in three now are going to be diabetic in this current age, and it's probably just increasing. It all starts with the gut, doesn't it? And it all starts with this LPS endotoxemia.

Dr. Jill 36:03

The other list of things, which makes sense with your kiddos—things like depression, anxiety, insomnia, behavioral abnormalities, bipolar, manic episodes, and rage—can all be associated with this LPS endotoxemia. And I loved when I

heard your presentation that you pulled this together because it's almost like we need to think bigger. And just like in the mold and the mold testing, a lot of the experts out there are now talking about this toxic soup that's much more than just mold. It's bacterial endotoxins, mycoplasma, and all these other kinds of things. So I really, really love that you broadened the scope. And what if it's actually [that] the binders are binding the LPS and the bacteria more than the yeast or the mold? And either way, it works. That's the cool thing. But that makes so much sense. And like I said, I love that you're bringing awareness to this because I think you're right on, as far as potentially this LPS, this bacterial coating is a bigger deal than the mold itself, right?

Dr. Pejman Katiraei 37:00

Yes. And I appreciate that. One of the things that's terrifying me—this is an area that myself and some others are digging into—is that when you look into the autism literature... In the neurodegenerative world, there are also a lot of—I'm sure you know—studies out there looking at these lipopolysaccharides (LPSs) in neurodegenerative disease, Alzheimer's, and Parkinson's. These compounds are highly, highly toxic to the brain. It turns out that there are several studies out there that have clearly shown that children with autism have significantly higher levels of these bacterial endotoxins versus healthy controls. The higher these bacterial endotoxins are, the worse the severity of autism.

Dr. Pejman Katiraei 37:53

One of the worries that I have—I have no idea if this is real or not—is what if what we call regressive autism is actually this tipping point where the child's gut is exposed to the toxins, exposed to the toxins, exposed to the toxins? It's kind of keeping itself together, keeping itself together, keeping itself together—whether there's an antibiotic, a virus, or the excess toxin of whatever's sold, including mold toxins. There's a breaking point, right? The gut loses its ability to keep it together. The microbiome and the fungus makeup get disrupted. You get the leaky gut. These bacterial endotoxins now become big players. Mast cells become activated in a significant way. And then there's that tipping point where that poor child who was keeping it together can't keep it together. And now they enter this chronic state of toxicity that's gut-mediated to ultimately cause these awful changes and losses that parents see.

Dr. Pejman Katiraei 38:54

And in the handful of kids (it's not that I've treated thousands of kids, but probably at least several dozen in), I keep seeing the same picture where the family—I'm sure there's a selection bias because these families are seeking me out—had mold. They didn't know it or were not aware of it. Kids get exposed. Little things. The kid has colic, isn't the best sleeper, has some sensory stuff, but is certainly making eye contact, and is still doing stuff. And then, all of a sudden, their system collapses. And it's just the saddest thing that we can prevent. That's the beauty of this conversation. I'm sure that's why you do everything, right? We can prevent; we can help. There's so much we can do!

Dr. Jill 39:41

Yes. I love that you're bringing awareness, because I agree. This is why I do what I do. There are so many people out there who maybe can't see you or me. But if they hear this podcast and start to think, "There was a leak in my dishwasher and I just let it go and now the floors are buckling"—so you start to see these things—you don't always need a doctor to get started if you just fix the problem, get out of the house, or whatever it takes.

Dr. Jill 40:04

I had so many thoughts as you were talking. One is that I just wrote an article on mast cell [activation] and psychiatric symptoms. It's so interesting: With autism, behavioral disorders, and ADHD, there's a lot of literature and evidence that when those mast cells—those bodyguards—throw out their toxins like prostaglandins and histamine, it preferentially affects the brain and some of our cognition, which is why it's associated with those kinds of things. But it's interesting because just behavioral disorders or mood disorders can be the number one presenting factor of mast cell activation. In these kids, of course, you see that.

Dr. Jill 40:39

And then the other thought—this is another side trail that I was thinking [about] as you were talking—we talk about LPS, this endotoxin, and the bacterial effect on metabolic. How many more kiddos are you seeing with diabetes or pre-diabetes? I think that's connected too, right?—this gut and this metabolic dysfunction. I don't know if you have any stats or even what you've seen in the clinic about how many more kids at a younger age are becoming diabetic or pre-diabetic.

Dr. Pejman Katiraei 41:04

Honestly speaking, I'm so focused on helping these kids with their neurodevelopmental issues that that other population is not a big focus of mine. But we know that the rates of diabetes and pre-diabetes are through the roof. There are younger kids and more kids having diabetes and pre-diabetes, without question. What I can also say—in the population that I take care of—is that metabolic and mitochondrial issues are rampant. I'd say at least 50% of these poor kiddos have either a mitochondrial issue where their mitochondria are somehow not functioning optimally or a larger metabolic issue where their ability to break down fats, for instance, and turn that into fuel—these fatty acid oxidation errors—are there. It's so common that I almost expect it to be there in pretty much all of the kids. And it's all related to these toxins mucking up the works.

Dr. Jill 42:07

Yes. I agree. And I'm the same way. I do this environmental toxic load and complex chronic illness. And the classical heart disease or diabetes aren't really the patients that I see either. So definitely, we have our niche for that.

Dr. Jill 42:20

One last thing here. We think about the environmental toxic load, mold, and all the stuff in our environment. But what you're describing is inside out; we are getting toxicity from our gut. And that's the core of our conversation here. This toxic overload is actually from the inside of our gut lumen and it's overwhelming our system. And it may be a bigger issue than the environmental toxic load from the outside, right?

Dr. Pejman Katiraei 42:45

Yes. The way I've come to see it is that we have the outside toxin load that creates the vulnerability. In some cases, it induces the dysfunction within the gut. Then, when we have the gut dysfunction—and the leaky gut, inflammation, and all of these other things—that adds a whole other layer of toxicity from within that then causes the systemic collapse because, at a certain point, the human body cannot handle that kind of toxic load. These LPSs are highly, highly toxic. They're deadly if they're in high amounts. And at a certain point, our antioxidant pathways, our liver pathways—the gastrointestinal tract is a complete mess, so forget about that being at all useful and detoxifying—the body gets to this point where there's no way that

it can on its own recover from all of this toxicity, dysfunction, and inflammation that's there. And then these kids are just stuck. That's the picture that I see.

Dr. Pejman Katiraei 43:59

Some of these kids have been exposed to mold when they were two. I'm seeing them at the age of seven or eight, and they're still toxic. They're still stuck. They're still struggling. And it's all because their systems, on their own, could not repair from all this damage that's there.

Dr. Jill 44:16

That makes so much sense. Say someone's out there listening—a mom of a kiddo that has a behavioral disorder, maybe a new diagnosis of autism or ADHD, or any of these things—and they're resonating with what you're saying. Hopefully, they can come see someone like you. But what bit of advice, wisdom, or hope would you give them today if they're listening?

Dr. Pejman Katiraei 44:39

One, the answers are out there. There's always hope. There's always a possibility of things getting better. Trust your gut. I think a lot of parents know in their hearts that there's something off. And they know in their hearts that there is an answer out there. But someone comes along and says, "Oh, that's not possible," whether it's their physician or whomever else. I just want to say: Trust your gut, trust your instincts, and follow that and allow that to guide you because you will find answers.

Dr. Pejman Katiraei 45:16

As Dr. Jill and I have discussed, there are so many answers, there's so much we can understand, and there's so much we can do. And that just starts with you saying: "You know what? No! I'm going to ask the questions, and I'm going to keep asking the questions until I find the answers that I want."

Dr. Jill 45:35

Dr. K, if people want more information about your programs, your website, where can people find you? And what are you up to nowadays?

Dr. Pejman Katiraei 45:44

People can find me, one, on Instagram. So if they go to Instagram, @wholistickids, that's where I post a lot of my information. Part of what I really want to do is help a

lot more families get access to this. And I wish I could be the primary person for every kid out there. That's just not possible. That's why we created Wholistic Minds. Wholistic Minds is an AI platform that basically looks at all of the things that we talked about at these levels of bacterial endotoxins, fungal dysbiosis, etc., and empowers providers to be able to see these things, be able to quickly access this information, and most importantly, be able to do something about it.

Dr. Pejman Katiraei 46:26

For any of you who are interested, go visit Wholistic Minds, and then with that, you can get teamed up with a provider who will be able to help guide you through this. I want every kid out there and every family out there to be able to access this kind of care and access this kind of information. And I believe technology is how we can do that at a very large scale.

Dr. Jill 46:47

I love that. And where's the website where people can find this?

Dr. Pejman Katiraei 46:50

It's www.WholisticMinds.com.

Dr. Jill 47:02

Wonderful. Thank you again for coming on the podcast!

Dr. Pejman Katiraei 47:04

My pleasure. Thank you!