Introduction and Functional Neurology Overview

Hi, everybody, and welcome to the Peptide Summit. I'm here with my friend Doctor Sergio, as you know, and I think that, he's probably one of the top neurologists in the world.

He's a functional neurologist and a chiropractor. And I'm going to let him tell you what that is. I think he has been, Source of wisdom and insight for me is, I didn't try to learn how the the brain works and understand the biology of the central nervous system.

So I'm delighted to talk to him today. And we're going to talk about how to think about diagnosing complex neurological problems. When I talk about the immune system, Covid long Covid, decided on me, a lot of things that, you may not have heard about five years ago but are increasing and incidence.

And so it's going to be something that you're going to have to be aware of and understand. So we're delighted, and honored to have you here. And so thank you so much for taking some time to talk to us.

Well, thank you, Doctor Cook. It's certainly a pleasure. And I, want to give you a heartfelt thank you for all that you're doing, not only clinically, but to bring this information out there, because I've been at this for nearly 28 years.

And, we've been fortunate to not have, any shortage of patients, but from a clinical perspective, it was quite lonely back then, dealing with these types of things because there are so few practitioners, and we're so fortunate to have so many people like yourself and all the other brilliant minds in medicine, step over the line and get into integrative medicine because we need you all.

And so thank you once again. Oh, thank you so much. I, we, we had, engaging conversation for the last half hour, but I wish I would have recorded because that was it was so good.

But, I'm excited to sort of engage into this, this direction of thinking about the brain. Tell me, and tell us, tell us what functional neurology is and how you put the put this central nervous system together conceptually and how you think about it.

So classically, most of us learned about the brain has a very hard wired structure many decades ago. And if people had a stroke, we looked for the area of the brain that was damaged.

We'd see deficits in the body. If they had a tumor, we knew that would provide deficits and whatnot. And so most were classically trained that, lesions had to arise from, a tumor or a stroke or some insult to the brain itself.

As you know, over the years, over the decades, we all started to understand the wondrous aspects of the plasticity of the brain and how dynamic it is.

And you may even have those, deficits, but many brain lesions, if you would, are not secondary to a true heart lesion. They're more soft lesions. We look at depression as a perfect example.

We look at vertigo. We look at brain fog. All of these things that unfortunately we're seeing more and more of nowadays. We're realizing that you could do a scan, you could do a, an MRI, you could do a Pet scan, and everything may look perfectly normal, but you have decreased function.

So I've been very fortunate to be in this space of functional neurology for several decades, where we've looked at just overall function in the nervous system, looking at and we'll talk about specific measurements that we look at, but looking at what areas of the brain are working well and which ones are not.

And then we can base very therapeutic efforts towards, rectifying that problem. So every neurologic exam will start off the same. It should with any neurologist, regardless of, whether they're coming from a functional neurologic perspective or another perspective.

We all should be looking at history from, as you know, in our world of integrative medicine, we look at histories, starting early on from in utero all the way through, not just from an energetic perspective, but there are things that take place in utero.

There are things that take place in early childhood that will wind up the limbic system, will wind up certain parts of the brain, and we all are, you know who we are today because of all that's happened to us over the decades in life.

And so when we see certain people that their coordination is much better. You know, if you look back in history, you may have realized that they, had some better development in one aspect or another or some deficits in one aspect or another.

So functional neurology, and certainly in my practice, we're blessed to be able to deal with a lot of neurodevelopmental disorders from early on, all the way through many professional athletes to the healthy individual wanting to maximize their function, to people with, neurodegenerative diseases.

And what we're always doing is assessing these individuals to see from a very objective perspective with very quantifiable, measurements, what areas of the brain are working well and which ones are not.

What would be give me give me a couple of the top assessments. Your top three is like, you know, every exam starts off with looking at sensory nerves, motor nerves, balance and coordination, balance and coordination.

When we get into that, there are simple things that all of us have been trained to look at, such as a Romberg test and a finger to nose and whatnot.

Balance, Coordination, and Objective Brain Testing

We look beyond that, and we put people on force plates, and we can measure what's called their center of gravity, very specifically how they're, maintaining their center of gravity where they feel normal and stationary is with their eyes open, with their eyes closed, with, their eyes open and closed on a hard surface, on a foam surface.

We also look at their limit of stability, meaning how far they move before they can lose balance. And although these things don't sound to be that important, they're some of the most important things that we could assess on an individual, because we know balance does decline in all of us.

Where we are in space comes down to our brain function. There's a map inside our brain of where we are in the world and of the world, and following head injuries, following many of the conditions that we all treat, from line to mycotoxins to these various infections, people can lose their spatial awareness and have different movement patterns.

So limited stability. For instance, if you look at the limited stability of a healthy individual, they can move quite a bit before they lose their balance.

We look at an athlete, they can move a tremendous amount before they lose their balance. But as we age or as we have these different conditions that affect our brain function, we could start to lose our limit of stability or narrow it if you would, and meaning if we move too far will not only lose our balance, but we can injure joints, we could sprain things.

And the difference between a healthy individual being able to move far, and an elderly individual moving to a point to where they fall and have to outstretch their arm and have a humeral fracture, or worse yet, an elderly individual that doesn't even get their arm out and falls over and smacks their head and bleeds out is purely a speed of reflex.

As and when we check somebody's limit of stability, that's what we're doing. We're checking your your reaction time, your speed of movement and your accuracy of movement.

And that, along with all these other neurologic parameters that we'll get into, are extremely important to have a good baseline of, so that we know, despite how you're feeling, we all like to think we're looking better with feeling better, but we have a good baseline of where we're at so that we know if our brains are moving in the right direction.

Yeah, I, I like that idea a lot. And. I also like our interaction because we, you know, we're, we're treating, really a lot of the same patients and doing similar things but coming from a different place.

And that's my favorite, thing in my life, because people that are coming from a different place than me, there's 95 things that you do that I'm just going to ultimately do because, it's going to make us better.

But interestingly, when I think of balance and all that stuff, the one of the things that happens when you get pain in a nerve is you immediately stop paying attention to McCann or reception or proprioception, or where you are in space because the body thinks, oh, I got to pay attention to pain.

And then as we age, almost everybody starts to have more pain and then then less good, spatial awareness and less stability. And then. So then, with you know, my experience, interestingly, with professional athletes, you know, when I first started, we were doing nerve hydro dissection was 5% dextrose.

You do that for a really good pro athlete. And then immediately their performance goes up. Because if you just tweak their that system a little bit, they were already so good.

It's super helpful. You do that also with with a profoundly ill person. They'll do well. But the better. You really need to do a better product for them for it to last the pro athlete might get six months of benefit from 5% dextrose, whereas somebody with complex on this will maybe get 2 or 3 days.

But so then as a as a concept if you can. And this is why I love so much you're testing and your algorithms of thinking about it. Because if you can then train and then work on those patterns, I think that that bio biomechanically may have more to do with anti-aging, or as much to do with that aging as everything that we do biochemically.

Sure. Absolutely. I mean, and the it's not so much that the brain, when you're in pain, is focusing on the pain. It's just those pain receptors are going to alter input into your cortex.

And as a result, your spatial awareness starts to change. And so, you know, the nice thing is we can measure that now. And, you know, I came from 30 years ago as a chiropractor, we would manipulate people and see an instant change in their balance and coordination, just by improving their joint motion, by increasing stimulation of their Meccano receptors.

But you know, the beauty of this year, as you said, it's so exciting because we share so many of the same patients. And coming from these different perspectives, is, you know, is a dream come true for me because it gives patients the best.

And it's really what they deserve is the best of both worlds. The I, I, I like to say there's that Moore's Law is in effect in integrative medicine because I feel like the quality of like what we do has more than doubled every two years.

And primarily it's but I would say half of it comes just from my products get better every couple of years. And then the other half, as I meet people like you who who say things that kind of blow my mind, and I walk around for a couple of weeks and think about it and then start to incorporate that.

You were talking about pupillary testing, and I do think that that's really interesting, because it goes into some of the things we're talking about. How, how how do you like to do that?

Well, certainly we always look at pupillary testing just for, a light response. But as I was speaking to, you know, earlier, we published a paper just recently, with my mentor, doctor, Ted Carrick, who put most of this stuff together, you know, several decades ago.

And we're looking at the pupillary light reflex. The name of the paper is the pupillary light reflex as a biomarker of concussion. And so now there are some wonderful little apps that we have just on an iPad and on a cell phone that my staff will just take a simple snapshot of one's pupil.

And we get very specific, host of different measurements on the, pupil from the speed of the pupillary constriction to the, maximum, you know, resting tone to the maximum, or the minimum dilation and diameter of the pupil to the constriction velocity to the dilation of the pupil.

One thing that we need to be looking at is about the 75% of, maximum diameter. So once the pupil constricts, how long does it take to get back to that 75%?

And so, you know, the beauty of this is the one simple thing that we all used to do with just a flashlight. And even 30 years ago, we were looking at not only how quickly it responds, but how quickly it fatigues given us a good window.

Is is it too much sympathetic activity? Is it too little sympathetic activity? Is it too much, firing of your Westfall nucleus that causes the constriction or is it too little?

Well, now we have objective measurements that can look very specifically at the multitude of these different pathways and give us a wealth of information on what's taking place.

And, you know, it's, the one thing that we found in the paper, first of all, let me just touch on that very briefly. Is when you look at people, and their resting tone of their pupil, first of all, the pupillary response is not just a product of ambient light.

It's a product of the resting state of multitude of different pathways in the brain from the sympathetics, as we know, the super optic nucleus, the dorsal medial hypothalamus, the, you know, locus to release the intermediate, intermediate lateral, so column of the sympathetics to the end, your Westfall nucleus that controls the parasympathetic, the ciliary ganglion and whatnot.

So there's all a magnitude of these different pathways that are all integrating specifically to give us that simple pupillary light response. And what we now know is that following a concussion, people can feel completely fine.

They could say, I feel great, I'm back to 100%. We're all celebrating. But we statistically and we found very statistical significance that there is still a change in that pupil following a concussion.

There's a change in the response of the pupil, which is significant because that tells us that there is some permanency taking place in an individual's brain or some permanency of, function that's taking place.

Now, we know in treating people we can see a spectacular difference in their function. But are we changing things structurally? We don't know. Are we just maximizing some pathways that are still working well?

So that's like all these things the minute we start talking and then I start talking to you, we have we have hundreds of studies that we need to employ.

And like we were talking about your spectacular work with the stellate blocks. I mean, it would be great to just measure their pupillary responses with an app like this and get some objective data before, after.

And let's follow them for a year and see what we get. So then I'm going to commit that. I'm going to do that with you. That so so then this would be a good sort of starting point of and then we'll move past this, but of, a little bit of a, of how we're thinking, how I would think about this.

The, Sean Berman, did this study where they did an animal model. This this was with a the people at Saul Surgical Network where they took, mice and then, took a, airgun and then gave them a concussion.

And so then then they would sacrifice those animals and look, and you would basically see a hematoma there in the brain. And then what they did was they did, half of them where they gave them a hematoma, and then they and then they gave them all kinds of tests.

And basically as soon as they gave them the hematoma in the brain, a concussion, all of their ability to do roll over and, and be in a maze and do everything they do went down.

And then they took another group and they gave them a hematoma, and then they gave them stem cells. And so then, sure enough, their ability to roll over and stuff like that is better than if they didn't hadn't gotten the stem cells.

And then when they got the stem cells, when they did, they did the, the looked at them afterwards. Their brains looked mostly normal.

Pupillary Reflexes and Concussion Biomarkers

If they'd gotten stem cells and you could see this hematoma now with concussions, then if you imagine that there's a hematoma, you may have, start to feel better.

But if that hematoma is affecting any of those 14 pathways that you just mentioned, you may actually still have signs and symptoms of neurological dysfunction.

And that means you do have neurological dysfunction. What we do when we do the cell it is, is that it, blocks the sympathetic nerves around the carotid.

And, what I've been doing is like one cc of rope, have a cane kind of close to the carotid by the vagus nerve. And I get a fairly profound there's quick vasodilation that lasts for about two hours.

And then you get increased blood flow to the head. That may be part of the mechanism of why I think satellites are helpful. For, patients with concussions.

And we see that, you know, that when, when there's an increased blood flow is a great time to give peptides or something on the regenerative front, stem cells and exosomes, and and then also in parallel to that is the anything that you do that starts to help biochemical pathways is going to help biochemical pathways wherever that lesions and that lesion could be anywhere.

And I love what's happening in this conversation, because you're kind of figuring out at a granular level where that is, and then starting to track the before and after.

And then we've really been focused on therapeutically. So is that this going to work better or is that going to work better? But ultimately, I think the trajectory of how we double, how good we are in two years from now is that we figure that out in detail.

It's exciting because, you know, we deal with concussion day in and day out. And I have never, you know, even contemplated sending somebody for still a block for that very reason.

And, you know, you blow my mind there because we just opened up this whole new world and it's like, wow. I mean, unfortunately, there's not enough hours in the day for us to just put all these things to the test and really see what works best.

But, I mean, you know, I that the exciting thing is, is that, every everything has its place. And I could just see the improvement. I'd be interested to see if the still eight blocks are working better.

With post concussive syndrome versus an acute concussion. Have you had much experience with that? I'm. I would say they're probably better for post concussive syndrome.

So I, I'm not treating generally a concussion like right. Immediately because they generally don't find me immediately. I would probably think of something more regenerative immediately and biochemical immediately.

But then when when they come in, you know, weeks later and they're really struggling. And so then that managing and thinking about that conversation is, you know, you think about football players and stuff like that, who we also see a lot.

I think that, we will be able to mitigate a lot of that damage. The more interventional that we are in in the coming years. Absolutely. You know, certainly in a perfect world for us, we would have baseline testing on everybody.

And we do a lot of that. And so we would have the not only the balanced testing I was telling you about, but we we do a variety of different baseline tests from something that we, utilize called the right eye, to video ocular graphy or video night stag mammography to also some standard, you know, neuropsychological assessments and whatnot.

So we will generally have the speed of people, saccades, down to the millisecond, their reaction time. Tell people what saccades are. The codes are quick eye movements.

We all have them and they're quick eye movements. So we could get the speed of your eye movements, the latency, which is the reaction time down to the millisecond, and also the accuracy of the movement, right down to the degree.

So we could assess all that in people's visual field. So we see if, your accuracy is better in one hemisphere or another one when it's, area or another, or if you're faster in one area or another, certainly for a professional athlete that's, you know, makes a world of difference if you're standing at the plate or whatnot.

But for every individual, it does, because some people just are a little slower looking in one direction or another. You know, we also get the accuracy of your movements, with our what are called smooth pursuits.

And we can look at smooth pursuits from a circular pattern to left and right, up and down. We could get your vestibular reaction time, how quickly your brain is responding, and how quickly your eyes move when you turn your head, because a simple little turn of the head activates the vestibular system, which is, in the inner ear, and that send signals into your brain to cause your eyes to move.

So, long story short, with that, and with a lot of cognitive testing that we're doing, if we had baseline testing on everybody and many people, we do and they get a concussion, we repeat the testing and we can see, as you said, very granularly where their deficit is.

And then much of our world in functional neurology is rehabbing that and rehabbing it very specifically. Certainly we use hyperbaric oxygen. We use many different modalities that you you're well aware of because they all provide a better, neurochemical environment.

Stem cells I've found to be, you know, exosomes to be very beneficial and helping, to maximize people's function, whether it's following you know, post-concussion syndrome or with later stage neurodegenerative diseases and whatnot.

But, you know, all exciting stuff. And I just, you know, as I said, very exciting to hear you come from your perspective because it's a whole new world for me.

And, and but despite that, coming from this, I guess my perspective, despite that, the first when I was an anesthesiologist and I realized I wanted to do this and the first thing that I did, one of the first things that I did was I went and studied with Andy Barlow, and I said, I did the American Functional Neurology Institute and did focus on the certification and honestly, I loved it.

And I when I got there, I realized, so this is what I'm going to do the rest of my life, and I'm going to extricate myself from anesthesia. You know, it was, it was, profoundly important.

And as soon as I got there, people started saying your name. And so I was then waiting to I was waiting to connect with you and honored. So then, interestingly, a topic that we started to talk about that is near and dear to my heart that then when when you talk about we're talking about distillates and stuff like that is this side of Nomi.

And so then this is a category of symptoms then. And that's a term that you may not have heard. There's another term you might have heard called pods and were, postural orthostatic hypotension, but and that may not even be a term you've heard.

But then when we start to tell you some of the symptoms of what it is, you may know somebody that has these symptoms. Tell us, tell us what does that a nomi is because this this one is going to be something is coming to a theater near you soon.

Well, to simplify it from our perspective, and I'm going to make it very simple because, it's when we lose the regulation over our autonomic nervous system, when we lose a regulation over our control, the blood vessels and heart rate and whatnot.

And, you know, as you mentioned there, Doctor Cook, many people haven't heard about it. And a day can't a day doesn't go by that we don't see many cases.

I as I'm sure you're in the same situation and, you know, for all the horrible things that happen with Covid, I think the blessing is Covid showed much of the world how infections can affect the brain and how there can be lasting effect, effects on the brain.

And on the autoimmune or, on the immune system leading to autoimmunity and whatnot. So I believe it's given a lot of credence and a lot of, validity to what so many of us have been seeing for so long.

And so with many of these infections, whether it's Covid, whether it's, as you know, the world's finally open up their eyes to Epstein-Barr.

Concussion, Stellate Ganglion Blocks, and Recovery

And many of us in integrative medicine been looking at Epstein-Barr and its effects on neurologic illness for a long time. Whether it's Lyme disease, these things can trigger some dysregulation of the immune system, as we see with head injuries.

And then people are no longer controlling their blood vessels appropriately. And so they may have severe exertional issues where they fatigue very quickly, they may have orthostatic issues where you get out of a chair too quickly and you feel like you're going to pass out, or even if you're thinking, we see a lot of people falling head injuries, they just even them starting to think or try these poor teenagers in school trying to keep up with their studies.

They get severe headaches. They get nausea. They feel like they're going to pass out vomiting. They get this regulation of their bladder and all the rest.

Because they've lost the integrity of the areas of the brain that regulate autonomic nervous system, which is what regulates all the organs. That's for the laypeople.

They're not for you. You know that, right? So then I'm going to say that in a same way. And again, just this is so important for people to hear. And then I want to talk about how you how you think about treating it.

So imagine that when you stand up, you don't even have to think about it. Your your blood vessels just perfectly constrict to maintain an even blood flow to your brain.

And then you sit down and in you relaxed. But your blood vessels are constantly modulating. And so everything the body does there is a constant modulation that's managing and balancing and harmoniously, making it so that blood flow and physiology is basically super steady.

As my my old job as an anesthesiologist was to stand next to somebody and look at a bunch of monitors and then watch the surgery and make sure that that was kind of happening, you know, at a macro level.

And, and fundamentally. A host of these infections will kind of basically throw a monkey wrench into that situation. And then it's choppy. And so when they stand up, the blood pressure can't manage the heart rate can't manage this.

They get lightheaded and sit down. The I think that this is going to be one of the defining things that the, will impact health care in the next 20 or 30 years, you know, and I remember somebody told me 3 or 4 years ago, Eric Gordon actually told me, and he he said, pots is Lyme, Lyme disease until proven otherwise.

This was at, you know, at that time. Now a lot of times this long Covid, but a lot of times long Covid is actually a Lyme disease that nobody knew about.

Once you kind of dig into it. Has that been your experience as well? So. Well, interesting you should ask because I think it's not only Lyme. I see a tremendous amount with mycotoxins.

I started in the late 90s. Vincent Marinovich was, in the Bay area here looking at mycotoxins and mold toxins and everything in his mind. Brilliant. Brilliant guy was mold toxin.

So, you know, we looked at that very closely and I came from that perspective prior to the Lyme world, and we saw a tremendous amount of, pots and decided nahmias secondary to mold.

We certainly see it with Lyme. I could just tell you in general, I tell my patients and certainly other practitioners that if you have the just not anemia, if you have the parts we need to fix that before we're ever going to get any traction anywhere with, you know, with getting their nervous system more stable.

You may be aware, I'm not sure if you are that we published a paper years ago. It was, my capstone project, going through the Global Clinical Scholar research program there at Harvard Medical School on the prevalence of Lyme disease and co-infections and people with, post concussive syndrome.

And so what we started finding is all the typical things that all of us see with Lyme, what's happening with post concussive syndrome also. And that's when we started taking a close look at most of our patients, and we found many of them that were not healing from their concussions with certainly disorder, Nami and Pots and whatnot.

But many of them that were not healing certainly had a very high prevalence. So over 38% had, Lyme disease. So now I think, we're better now with you.

My theory about that is if you go back to our conversation about that thing where they gave the the concussion gun to your host and you created a hematoma, my theory on that is, is that if you have a, some kind of vector borne illness could be viral, it could be bacterial, it could be Bartonella, Lyme or, but most commonly mold.

I would say I totally agree with you that that is, that concussion and hematoma gives an opportunity for that infection to get into the brain, or at least into the blood vessels.

Where where that heme, that, that that bruise was. And then normally the brain is privileged, and and it's not exposed to infections, but that's a way for them to get in.

Absolutely. I couldn't agree more. I do think, you know, some of these things are sitting at a subclinical level, and, it's not until you have an insult and it doesn't need to be a concussion.

It could be a death, a divorce. It could be you know, a trauma. Many people have emotional traumas, and that can cause a cytokine storm that opens up the blood brain barrier, and these things take off.

You know, there's also we've also seen, as, you know, plenty of people that are not converting with saline. They're not, you know, converting from an ECG to an AGM or vice versa.

I'm sorry. And, and suddenly they have this, even a logical shift in their body and things take off. So, you know, that's, certainly requires more study.

But I would agree with you that I think it's probably a blood brain barrier issue, where they lose the immuno privileged, aspect of the brain now. So then if we went down the the the pods conversation, and we're, we are 100% getting phone calls around.

Oh, I had been healthy, kind of basically everything had been fine. Got Covid and then developing parts, symptomatology, and low blood pressure when standing up and passing out and, and, so then the question and we've seen this after Covid and Covid vaccines.

And so then the question is from a diagnostic functional neurology perspective, when you see that person, what are you what are you see. Sure. Let me let me first preface by saying I started off in the functional neurology world.

My my brain opened up to all these different infections and all these different things right away because we'd see the lesions neurologically. But we said, well, what's causing them?

We could rehabbed successfully, but then some of them may come back. So what's causing it? So I don't think one has greater importance in the other. I think we really need to look at all these things, and we certainly do.

And my hopes is that these two worlds, as you said, are beautifully starting to come together, at a high level. So, we diagnostically will assess these people just as we do.

I mean, you know, we we always look at orthostatic issues, whether somebody has symptoms of pots or not. But the reason from a functional neurologic perspective why 1st May have Pots, it can be multifold.

I mean I've seen pots from secondary, you know, to ipsilateral vestibular lesions. I've seen it's secondary to certain areas of the brain firing too much.

And as a result there, you know, not inhibiting, some of these aspects I've seen it from vagal lesions. I've seen it from a whole load of things. And so from our perspective, we're once again examining the individual, identifying what is happening in their regulatory system.

There's aspects of the limbic system. There's aspects of the frontal lobe that's going to regulate that. There's aspects in the brain stem from the look of serious to the nucleus track to solitaires, all these different pathways that we need to assess very closely to see what the lesion is.

When one person is lying down and they get up, we know they have to have a change in their baroreceptors. We know the change in position is coming from the vestibular system.

We also know that there visual awareness of where they are has an effect. And so our drive is to figure out what is not working neurologically and then give them some rehab often times.

And we have great success with parts. But, you can't just do a generalized, you know, stimulation to the brain. One person may benefit from rotating in one direction versus another.

POTS, Dysautonomia, and Infection Triggers

One person may, benefit from doing near, far gazes to fire the, you know, pupillary ciliary muscles and fire their

descending pathways to their parasympathetic and other person may do well doing some isometrics and some Kegel exercises to fire some some descending pathways, you know, dealing with parasympathetic control.

And, you know, it's, as you know, the list goes on not to be elusive, but just like, you know, you can do things, in your office from an injection perspective, biochemical perspective, you're not going to take somebody with parts and not assess what the underlying sources. Right.

And you would do that from a neurologic and a chemical perspective. Right. We're and we are certainly also kind of working on that as well. But just as to think from kind of a peptide perspective, since we're sort of talking about this at a biochemical perspective, I would correlate a lot of that symptomatology to infections.

And so then, like you, we're we're thinking about what what what, what's going on in terms of making toxins and infections and then sort of treating that.

And then that's like a whole nother conversation. Beyond this, the when we do the stellate, we're right below, basically the bifurcation of the carotid.

But you can do high cell rates that are at that bifurcation. And, I will feel that sometimes just the cell, it by itself will be a little bit of a reboot of that barrier receptor.

And so then sometimes that will help the, immune peptides can be quite helpful in terms of relieving that symptomatology. Thymus and beta for I like the fragments of time some better for much more than thymus and beta four.

So the fragment 1 to 4 is the anti-Mafia matri one, and then 17 to 23 is the more of the connective tissue one. And I'll combine both of those with thymus and alpha one.

If they're some of these are just autoimmune and there's not an, there's like an autoimmune action that's going on. Related to an infection that may or may have been present in the past, and maybe that's all that's needed if there's an actual active infection, sometimes we'll use a little 37, which is an anti-microbial along with other antimicrobial strategies.

The the, you know, we will do a vagus nerve dissection, basically in the front of the C one, transverse process. And, and so you can see the vagus there and that that can be interesting.

And so there's a variety of sort of products you can begin to use. But then using, using those as biochemical ways to sort of work on pathways. And, and I think it's interesting to frame that as, as a, as a synergy to what you're doing because you're actually and that was my first when I first found out about this, I was like, okay, I have to understand that and incorporate that into our world, because with doctor, as Lina is doing, is actually figuring out which which tract is having a problem.

And training that track. And then if you kind of imagine that you could the, the best thing always is to combine 4 or 5 modalities, because you always have to do that for super complex problems.

And so then I think that there's going to be this moment when you start to train a pathway, and then you're doing something that will boost metabolic activity or, or mitochondrial activity.

So mitochondrial peptides, so then imagine someone's taking S 31 or imagine that they're taking human. And while they're training that, that, that vulnerable neurological pathway, I think what's going to happen is then suddenly that part of the brain comes on.

And that's that's our perspective and that's exciting. It's certainly been, we're not doing peptides at the level that you are, there, but it's certainly been my, my understanding and my reality of when we combine these things, we just get people better on a whole different level, you know?

As you know, many patients say, or many practitioners unfortunately say, well, I don't want to do too much and I know what got you. Well, I say, I mean, who cares? Let's get you.

Well, let's get you well quickly. We don't want to do too much. If you're reacting, we want to, find out what you're reacting to. But my reality is combining these things at a high level like you're doing and combining rehab to target those areas, gets people better much more quickly.

And certainly I think we all need to work towards that because, as you know, we're just seeing an explosion of these. Yeah. It's interesting. What, what what has been your experience in taking care of the neurological sequelae of, of Covid and Covid vaccine as well?

You know, as we discussed before, the people that I am seeing adversely responding to the vaccination and this is not a vaccine or an anti-vax conversation in any way, shape or form.

It's done wonders for, you know, millions of people. But the people that we're seeing adversely respond and we're certainly seeing a lot of those, as I'm sure you are, because of just a patient population we deal with, most of these people have underlying either these infections that are at a subclinical level or, you know, underlying immune dysregulation.

And so, you know, they're just popping right after the vaccine. It's just pushing them a little too far. So, we're certainly doing things, as you've mentioned, to calm down the immune response.

And we're certainly getting down to assessing their underlying lesions. We've seen people that have dizziness, and if they have dizziness or usually having a cerebellar manifestation or a vestibular manifestation, and we do things to activate those pathways, you know, the vestigial nucleus in the cerebellum is going to dampen a lot of this tubular input.

We do a tremendous amount of vestibular therapy. We utilize a gyrus stem to provide very specific, stimulation into the vestibular system. We can program that machine however we want as fast and slow with, down to the degree of movement.

And we could be very exacting on just providing information or stimulation into one canal or another. So, you know, once again, and, and, you know, it frustrates, I think, a lot of physicians I want the simple answer and you're not one of those guys, but you see a long Covid case where you got to examine it and see what the hell is going on.

You can't just assume it's all the same thing because they're all for different reasons. Exactly. And just like that concussion could be up here or it could be down here or it could be in the ear.

And so, so then you're trying to figure that out. And then the, the my experience has been figuring it out has been a bridge for me between Western medicine which in from the neurology perspective, I felt like traditionally was a little bit of diagnose scenarios to the chiropractic community that actually had a lot of stuff to do.

And then the naturopathy community that really had a lot of interesting stuff to do also. And then kind of bridging and harmonizing between all of those things which which fundamentally is really what we both do in our practice.

Yeah. And I think if we hopefully we get there in our lifetime, I think it's happening like you said, hopefully all specialties are really just focused on a very patient, patient centric model of let's examine these people and determine what's best for them.

You know, I examine people all the time and say, hey, they're going to be better treated by you or they need X, Y, or Z, or we do a combination of things and hopefully, if we're honest in that regard, rather than, people just practicing their modality.

I mean, what I love about your practice and my practice and we're doing multiple different things, so we're not tied to doing one thing that well. And you know what?

I'm I, I sort of feel like what happened is we were we were in a little bit of an, a missionary appeal of, helping people, which was fun. Five years ago.

But now the, the, the level of, of immune and kind of neurological problems has come to such a crescendo that there's more work than it can. Anyone can do.

And, you know, we were talking about the value of diagnostic testing, especially the diagnostic testing that you do. These are such big problems. And then they have a fairly substantial economic impact.

And because if you have more than that, may have some significant financial ramifications of what are you going to do about the House? How are you going to detox it if you.

And so then, you know, we love energetic testing. And and because I think a lot of us grew up doing some of that when we were young. But if you're going to make significant decisions about what to do with your life, that would be valuable.

I think. And I think you probably agree with me to do some real testing, and probably you're the best that I've come across so far in my life. In that category.

Well thank you. We're so lucky because science has caught up to what we're all been doing, right? I mean, if you look, if I look back at what was happening in the integrative medical world 30 years ago, I mean, like I said, it was quite lonely from a physician and practitioner perspective.

And now everybody's talking about this stuff. And and we don't need to theorize about stuff anymore. There's testing. There's there's blood work that shows us what's happening.

I mean, can imagine if we weren't looking at D-dimer with, you know, long Covid, right? If we just said we think this is happening, I mean, we we can measure these things now.

And certainly we know with these infections we can measure and we can measure with mycotoxins, we can measure antibodies. And so we can measure the same neurologically.

And, we're so fortunate in that regard because with the explosion of objective data, I don't think we need to rely on subjective things anymore. I test muscles on every single patient I see.

I've probably tested millions of muscles without any exaggeration over the years.

Long COVID, Vaccine Reactions, and Diagnostic Strategy

I don't rely, and this is no disrespect to anybody that's utilizing that, because there's some spectacular practitioners out there. But I don't rely on muscle testing to make decisions on these things anymore.

Not because I don't want to because I don't need to, because there's objective parameters that we can look and find out most things. And as you know, if I don't know about, oh, how do I test this, I could call up Doctor Cook and he's probably going to say, well, this I could test it and vice versa.

And so we don't need to rely on the energetic stuff so much anymore. And that's not to dismiss it. It's just we're in a world now that, science is providing us a lot of quantitative measures that, we could only dreamed, have dreamed of 30 years ago.

We one thing we were talking about in terms of that neurological piece, I was telling you that, we got a phone call last night of, of, a friend of ours that I had dinner with, the, like, the week before Covid, who got a Covid vaccine, and then, like, two days later, her Covid booster.

And then two days later, she had a stroke. Two days ago, and then I mentioned that to you and you said, oh, I saw

I saw three of those this week. What do you think is going on with, with so not all of them had strokes.

Let me preface that one was, hospitalized with for emboli. And yeah, another one was, an ICU nurse that unfortunately, had a vascular reaction and as a result has severe pots now.

So they weren't strokes, but they were, you know, right there. So what do I think's happening? I mean, I think in digging with all these three people in this, not just, one week, we're seeing this stuff regularly.

As I said, I think most of them have some things taking place. I mean, I think, most of them have, some underlying health issues that were not, addressed.

And as a result, they're right there. Who knows? It would be so nice to have all the neurologic markers that we have, all the autonomic markers looking at their coagulating factors and whatnot, and, have all that before, right, and measure it after.

But we don't have that fortune. Although, we had dinner and then we had dinner, and then this Pi my favorite thing about you, and probably my favorite thing in general about my, my life is I remember we were talking and we were talking about Covid, and you, you said, this is our war.

This is our World War two as doctors. This. That was before Ukraine. No. Yeah, but but this is when. And I feel I have profoundly felt like, okay, if there's a burning building and I'm probably a fireman, I would love to run into that building because that just who I would be.

And and this was, in a way, a moment for us to seize, seize the day and then take everything that we learned. And if I died, I would basically be fine because I would feel like my life, I did what I wanted to do.

This is what I wanted to do. But interestingly, if I, if I was thinking about it, if if I went back to when I was in Seattle, just I basically had nothing that I could do to fix myself on the other side of things, because the only things that I'll just have is that that I'll and for said to really get into trouble with, but you know, as in regenerate out of medicine, it's I think that for doctors out there, suddenly you run.

Yeah. You hear about an ICU nurse that has trouble. You get into a situation where you go and you get exposed to somebody, and then you take thymus and off a one and a 37 afterwards and it's you begin to have.

And that would be just be the beginning of a host of things. And then peptides are kind of an interesting category because they're relatively low cost.

And, and there's something there tools that practitioners can begin to kind of have to help take care of themselves as their as they're doing this stuff, because I think there's going to be a whole generation of people that where anytime you go to war, there's trauma.

You know, PTSD is probably one of my favorite thing that I do because I'm so passionate about it, and primarily because I'm so hopeful. Like when I talk to somebody this traumatized, I basically I talk to them until I come to the conclusion and I kind of do this thing I call the mathematical proof, where I come to a conclusion that they're going to be okay, and then we navigate to a narrative that is some kind of hero's journey story.

They're going to be okay. And in a way, I'm just kind of trying to arm them with tools and and skills and things that that will help them on that journey.

But care. And, you know, it was exciting for me to hear how you were so passionate about this is what we got to do now, because I do think it is, you know, our generation has been extremely privileged and not having to fight a real battle.

And here we are. And I think it's I still remember that moment when things were shut down in San Francisco. I mean, it was eerie, but I remember having a staff meeting was like, okay, what are we going to do?

What's our role here? And our role is not to say, oh my God, you know, things are dangerous for staying home. This I don't know, how can we step in and make our difference in our own little way.

And I do think it brought together a lot of the health care community. Certainly, you know, praise to the physicians and all of the nurses on the frontlines.

But being in our worlds, too is really exciting because we knew and here we have it, right? The long Covid is something that needs to be treated and needs our expertise at the highest level.

So it's absolutely a calling of us stepping up and saying, what can we do to make this difference? You know, back to what we're talking about. What the what the reaction.

I think hopefully in a short period of time, we'll be able to us as a health care community, really analyze better understand why some of these people are reacting rather than just extrapolating and saying it's safe for unsafe or whatnot, and it's just going to challenge us all to take a look at things on a deeper level.

I mean, something like pans and pandas. Man, I was I was, you know, reported to the medical board 20 years ago for diagnosing pandas. You know, so I tell people what so of of day, shockingly important thing for parents to be aware of is, is those two terms.

So tell people what those are. Pediatric autoimmune neuropsychiatric disorders secondary to strep or just, pediatric autoimmune neuropsychiatric syndrome.

And these are unfortunate, psychiatric conditions, meaning 1st May have OCD, they may have tics, tremors, Tourette's, they may have obsessive compulsive issues.

And unfortunately, we commonly see the worst of the worst with these things. And what happens is people, individuals. And it doesn't need to be a child. It happens in adults also.

But most of us that have, more, mature immune systems have a little better regulation over this, but, we can get an infection. Kids commonly get infections.

They may get a simple strep infection. And then after that develop severe anxiety or severe OCD or something of the sort. And what's happening is, a simple case of what's called molecular mimicry.

The strep, looks very similar to different parts of the brain. Also, just as one can develop, you know, cardiac condition, you know, a rheumatic fever.

So 1st May also develop antibodies to attack certain parts of the brain. And, and in attacking those parts of the brain, they develop these psychiatric syndromes.

The reason why this is so critical is, if we recognize that this is happening as a result of autoimmunity, then we treat the autoimmunity. And there's a host of things that can be done that Doctor Cook will be able to ramble, what we can do from an autoimmune perspective to treat that rather than putting these kids on drugs to treat their psychiatric condition, you know, thank you.

And, you know, it is one of the most heartbreaking things, dealing with the athletes and all the high level people that you and I deal with is sexy. It's fun. It's gratifying.

But dealing with these kids, is really, you know, in my opinion, God's work. Because unfortunately, they're so bad in their lives are just put on hold and it destroys families.

It just rips parents apart. Because these kids can worse and worse and and worse and and no, psychiatric medication. The world's going to solve the issue.

That's not to say they're not necessary.

PANS/PANDAS, Neurorehabilitation, and Closing Thoughts

And it's not to say they don't provide a lot of benefit, but it's not hitting the mark because we have an autoimmune condition taking place, and we really need to focus our efforts on, number one, addressing the autoimmune.

And once again, from a functional neurologic perspective, we have tremendous success with treating those areas of the brain and getting them more stable.

Have you seen, those patients with that have had tics for 20 years, 30 years? Well, you see, those get better with neurological training. Absolutely. Remember, if somebody is having tics or tremors, it's it's not a symptom of, of strep.

It's not a symptom of live or mycoplasma pneumonia or any of these other things that can cause pans or pandas. It's a symptom of some deficits in largely an oversimplification.

Once again, I welcome any of the neurologists in the group to, higher level conversation. Or even better yet, you can come in and, do some rounds. But, it's an oversimplification of we commonly see the secondary to some dysfunction in the basal ganglia, basal ganglia, a little nuclei in the brain, little areas of the brain that turn on and turn off motor activity.

And quite often those circuits get a little tripped and we lose a lot of the inhibitory aspects. So when the brain is stimulated we just get spontaneous activity.

And so yes, we absolutely train these things. We train them. We fire the inhibitory pathways, the beauty of what we can do from a neurologic perspective, if it's being practiced at a high level, is we could fire specifically the inhibitory pathways, not just give something that stimulatory to the brain and hope that the inhibitory pathways fire, not just putting a chemical in there, you know, an SSRI or something of the sort or some Gaba, and hoping that we're going to, activate these inhibitory pathways.

But we could fire them very specifically and train them, you know, you could do things like antipsychotics where you have to look the opposite direction.

You get people in front of like boards where they have to not react. Kids not react to certain targets, but react to others. And we can just train these pathways over and over and, and make a world of difference.

We get great success with, pans and pandas. And once again, it's not to, overreach, no matter what causes these things that we all see. You can kill off the lime, you can clear the mold toxins, you could kill off the strep, the the infections, whatever it may be.

But you the brain just doesn't jump back to normal. You have to rehab it. And, you know, it'd be ludicrous to think, you know, somebody blows out their knee, we repair their knee, we get rid of their pain, but suddenly their knee is going to be back to normal.

It's not we we need to rehab it. And we also know that the longer you leave these things here, the greater probability of permanency. And then I, I want to echo this idea because then this has been a great theme for this conversation.

And I think it's a, a theme that people may not have heard of. And I, I feel this conversation had been a good sort of one on one introduction to the idea that someone could be in a water damaged building and get exposed to major toxins, that this regulates the immune system, and then all of a sudden they get a concussion, and then that causes a problem, or they get bit by a tick and that infection has this immune thing, and then they're more susceptible to Covid, or they get Covid or they're a little kid and they get strep.

And then that causes something that affects their their brain and then their basal ganglia can't regulate. And so then there's having these problems. Now these are basically all examples of how the immune system and the nervous system are so, so intertwined and so influencing each other.

That the only way to, to basically fix these problems is to pay attention to, to both sides of the equation, the synergy to try to diagnose to the greatest ability possible.

And then and then we have a lot to do from, from a therapeutic perspective, both from your training and a peptide side. And even though we didn't talk in great detail about peptides, I feel that, this is the value this was so valuable for people to hear, hey, where you're coming from.

And be that really where the, the, the future is that we're going to be guiding what we do based on these principles and that. And then, and then that's going to help us get more data and, and directionally, I think this is the direction that medicine is going in because we're being led there, because these are the problems of the day.

Absolutely. I mean, I, we did not speak about peptides and our use of them, but, you know, they are integral to creating a healthy biochemical environment.

And, you know, I can't understate that, they're spectacular. I love them, I love them personally. And patients love them. And great get great success with them.

And and to me, it's, you know, there's so many sick people in the world that we're all so busy dealing with all of the ill ones that you discuss. But, you know, hopefully in our lifetime, we could focus on just 100% maximizing wellness and function.

And they certainly play a big part in that. Great. Well, it's an honor to talk to you. I am grateful and, I look forward to what the future brings, for us and, I look forward to continuing to learn from you because you're a wealth of knowledge and insight.

Well, you took those words out of my mouth. Out of my mouth, Matt, because, it's truly my honor and pleasure. And, I can't thank you enough for all that you're doing.

And, like I said, clinically and also bringing this information to the world. So thank you and God bless you for that. Thank you so much. For.