Uncover Your Path To Neurological Resilience Transcript

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Introduction to Dr. Peter Kan

Welcome to this episode of the Reverse Alzheimer's Summit. I'm your host, Dr. Heather Sandison. I'm delighted to be introducing you to Dr. Peter Kan today.

He supports and manages patients with chronic conditions, using a comprehensive approach by merging the exciting advances of functional neurology and functional medicine.

I'm so delighted he's here today to talk to us about his background and how he applies this to Alzheimer's and dementia and his perspective of Alzheimer's as an autoimmune process.

Dr. Kan, welcome. Thank you so much for having me. You have a program called Neuro Metabolic Integration. Will you explain a little bit about what that is?

Yeah. Thank you for letting me share.

Neuro Metabolic Integration

So neurometabolic integration is describing the connection between neurological conditions and metabolic conditions. And, you know, by metabolic it's not just blood sugar and metabolism, but really everything downstream from blood sugar and including reactive oxygen species, oxidative stress, hormonal impacts, inflammation impact.

And I actually came up with this term, oh gosh, 2010. I actually trademarked it because I was already seeing in the research world that there's so many connection between neurological issues and metabolic conditions that I felt like if we were to help someone with brain issues and we don't address their metabolic issues and inflammatory cytokine issues and gut issues, that we're leaving a lot of gains on the table.

So that's really where I developed the program to really using functional neurology and functional medicine and combining those. And been doing that since 2010.

And I think, you know, more and more research is showing that, yup, that's where the direction is headed. It's so funny. I remember being in class when I was in naturopathic school and having an instructor say that she was a psycho neuro immunologist and she had published in that space.

And I was so overwhelmed by just the gobbledygook of words. And now when I think back to that, I'm like, Oh no, we need to add metabolism. Like, how do we add psycho neuro metabolic immunology, right?

And you've sort of done a little bit of that, had the foresight to add that metabolic piece to the conversation. So tell me a little bit more about where autoimmunity I know that's a big part of of how you of your perspective when it comes to neurodegeneration.

Can you tie those all together? Yeah. In the beginning stage of my functional medicine and functional neurology practice, a lot of what I was who I was taking care of were people with autoimmune disease, in fact, mostly Hashimoto's.

That was my primary clientele, if you will.

Autoimmunity, Brain Inflammation, and Neurodegeneration

And what I saw was that people with autoimmune conditions often have this manifestation of neurological symptoms. And these neurological symptoms include things like fatigue, brain fog, short term memory issues.

They may have trouble with word loss. You know, they say something's like, oh, you know, the word just at the tip of the tongue, they can't spit it out.

Short term memory loss where they, you know, forget things easily. And these are things that's not like, oh, I'm always forgetful. It's actually declining for them.

They may also have depression and anxiety. Many of them may have balance, problem, vestibular issues and even neuropathy. And so I saw a lot of these people with autoimmune problem, even though it's autoimmune thyroid or celiac disease or rheumatoid arthritis.

But they all had this commonality of neurological symptoms. And this led me down the road to really investigate. Look, what's what's driving this? Why would these people with autoimmune disease have these type of neurological phenomenon?

And it turns out, really, if we're going to talk about the brain gut connection, we have to include the immune system in that, too. Right. Like your professor says, psycho neuro immunology.

It's almost like what is not connected here. Right. It's like psycho neuro immunology, gut hormone. And so, you know, I feel like the immune system is a big piece here because when you're when you have autoimmune disease, your immune system basically has become dysregulated or out of balance in a way in a way that produces a baseline level of inflammation that's higher than someone who don't have autoimmune disease.

And this baseline level of higher inflammation is going to create this soup, if you will, of cytokines and inflammatory process that's going to drive not only bodily inflammation, but that's also going to drive brain inflammation as well.

And then when you start to drive brain inflammation, any time when you have brain inflammation, I think this is important for the audience to know because we throw this word around a lot, right?

When we say inflammation or what is that? Well, inflammation simply is an immune response. So inflammation is not a bad thing. Inflammation is actually that weapon of destruction for your immune system to kill pathogens.

Like if you have a pathogen that you need to kill inflammation, that's what's killing the pathogen. So when you have an infection, inflammation is goodness for us.

But when that inflammation doesn't stop, that pendulum swings way too far. And then you have this chronic inflammation. And what happens is not only the pathogen gets killed, but your own tissue gets damaged, too.

Once you damage your own tissue, you can have cellular debris floating around. Right. Can I thinking, like if you have a car accident, you're going to see like a bunch of glass and plastic all over the road.

That's what happens when your cells encounter inflammation. You're going to have a bunch of cellular debris floating around and in your brain, if your brain gets inflamed, you're going to have cellular debris of brain tissue floating around.

And what happens when you have any kind of cellular debris, your immune system is going to pick up those cellular debris and say and make a decision, do I want to attack this or is this something I want to tolerate?

And there are ways in which your immune system can tolerate soft tissue. But then when things don't go right, that can set your body up for potentially developing antibody to soft tissue, including brain tissue.

Now you get brain inflammation on top of what whatever else, inflammation or or autoimmune that you have as well. So this is where I saw a lot of these people who have autoimmune disease having brain inflammation and then eventually can even lead to brain autoimmunity as well.

And of all or this is all connected to the topic that you have, the summit, which is neurodegeneration, because if

you damage brain tissue at a faster rate, that you're going to lose neurons.

And if you lose a nerve enough neurons, you're going to have neurodegenerative and the associated loss of function. So you've referred to your training in both functional medicine and functional neurology.

Will you just define those real quick so everybody kind of again gets a sense of your perspective? Yeah. So functional medicine and as many people watching this, probably a familiar or maybe already working with someone is to me is a thought process, right?

It's a philosophy of playing the detective of looking for the root cause, functional medicine. It's not supplements. Functional medicines is not, you know, just, you know, cutting out gluten.

Functional medicine is getting at the truth of the matter of what's causing problem using nutrition, lifestyle, medication, if necessary, and all different type of tools that we have at our disposal.

Now, functional neurology is basically a a practice were similar to functional medicine where looking at the root cause where identifying exactly what the level of the lesion is.

Functional Medicine and Functional Neurology

And we're applying noninvasive treatments like brain rehab, certain type of brain stimulation exercises or vestibular rehab or eye exercises to try to restore brain function.

Because the principle of how the brain works is based on plasticity. So brain function improves when you have plasticity. So even if you lose neuron, but if you are able to have neuroplasticity at a rate that can compensate for the loss of neuron that you're going to maintain function.

This is why Warren Buffett, despite pushing 90, maybe he's already 90, maybe he's 190, I don't know, still is running Berkshire Hathaway and still very high functioning.

Right. So we all see people who are elderly that have great function and people who are younger that has poor function, brain function. So a lot of that has to do with plasticity.

And so in functional neurology, we're looking at what is the exact area that's not functioning right. And can we apply very targeted, specific rehab exercise to make that particular area of the brain work better?

Amazing. So when you approach someone, a patient with memory loss or dementia, even, where do you start? That's a great question because I think the temptation is that when someone has memory loss, they will want to give them ginkgo biloba because it's it's the start process of treating the symptom in a way.

Right. But I think for me, where I start is always asking the question, right, like what's the context of which this memory loss came about? How long has this person had it?

What's the severity of this? And more importantly, what other problem does this person have as well? So let's just take memory loss that you just brought up.

Let's say we don't know. This person has is this person is not diagnosed with dementia or Alzheimer's yet. They just they have memory loss. I so we're concerned about potentially is there a neurodegenerative process, but we don't know that this person has memory loss and this person also has a lot of sleep issue.

This person also has loss of smell. Right. So then when we put those three together, this is basically helping us to triangulate that there may be a problem within the temporal lobe, maybe within the hippocampus, because circadian rhythm control is primarily done through the hippocampus.

And we have a smell, which is the olfactory chord center, which is actually male olfactory ball, which is kind of

centered around the temporal lobe area in that midline structure.

Clinical Roadmap for Brain Health

And then we have short term memory issue, which is also a hippocampal temporal lobe function. So when we see these symptoms together, then we're concerned about that particular region in the brain.

So that's functional andrology to be able to triangulate what part of the brain's malfunctioning. And then the next question is functional medicine, okay?

What's causing that area of the brain to degenerate or to not function properly? Is it because of blood sugar dysfunction? Is that because of this person is spiking cortisol all the time?

We know that hippocampus is an area that along with HPA axis controls orders. It's all melatonin, circadian rhythm function. So if someone is spiking cortisol the time either because of lifestyle or inflammatory reasons, then that cortisol, that elevated cortisol is going to overwhelm and cause neuro excited toxicity of the hippocampal cells leading to hippocampal cell degeneration.

And that's basically the mechanism of Alzheimer like where it starts, right? So. So if this person has these lifestyles, issues and chemistry that's driving cortisol response, then that's something that we go after.

So then we're combining the knowledge of how brain functions and be able to triangulate that, combining with functional medicine in the root cause perspective to say what is causing that particular area to generate degenerate, that we can come up with a solution that's very targeted and tailored to that person.

Got it. And so let's just take that person with the memory loss and lack of smell. This we know lack of smell is one of those early signs of Alzheimer's, actually.

So explaining where that sits in the brain, that makes a ton of sense. And then the sleep issues. We also know that, you know, beta amyloid plaques, we see that build up measurably with just one night of sleep deprivation.

So adding sleep deprivation to memory loss just perpetuates the problem. And even when you're in your twenties and thirties and forties, you have this measurable increase in misfolded proteins after just one night of sleep deprivation.

So when we add those on top of each other over decades, this can really accumulate into something that is detrimental certainly to the brain. And so from a functional medicine perspective, functional neurology perspective, how do how do you start addressing these things?

If you're a chiropractor, do you. Do you do adjustments ever or exercises or. Yeah. What like what does it look like tangibly to work with with someone with your training?

Well, in my practice, when I had a brick and mortar, I'm currently 100% virtual, primarily consulting with people. But I had a lot of brick and mortar practice that was very, you know, that we were doing some very advanced stuff.

Okay. Very advanced therapies. And but in general, many of my colleagues who are also chiropractic board certified chiropractor, neurologist, they would do a functional neurological exam looking at how our different regions of the brain functioning by doing challenges and muscle testing and eye muscle testing and you know, perhaps a measure, you know, a, you know, even oxygen levels and under certain circumstances.

So there's a lot of ways that we try to tease out where the functional deficiency is, and then we will seek to improve their function by doing various neurological exercise.

That's that's a clinical office setting. And then on the other hand, it's also the nutrition aspect of it, right? Because if someone is have this glycemia or someone is having anemia and they have poor circulation, so they're not getting

blood flow to the brain or they have, you know, gut issues.

These are all things that we have to check the box and make sure that we cover. And that's kind of a there's a clinical roadmap that that I have developed that helps you to make sure that I don't make bonehead mistakes, that I'm checking all the boxes so I don't miss something.

And we can we can go over that in just a little bit. I would love that's exactly what I was going to ask is what is the roadmap to healing brain autoimmunity, brain inflammation?

I'm putting these pieces together so that people feel clear about how to resolve their symptoms. So let's use sleep, for example. Right. So sleep, as you mentioned, even one night of sleep can cause huge problems.

But that's you know what? I'm a sleep deprivation. And some people, they they don't sleep enough because they stay up too late watching Netflix. They choose to stay up late.

They don't get enough sleep because they think, you know, hey, I'll sleep when I'm dead, you know? So some people literally have that type of mindset about it.

But other people, they they they try to go to sleep, but they can't fall asleep or they can't stay asleep. Right. So then using a clinical roadmap, help us to identify.

Okay, if this if this person is going to bed early but they can't sleep like what's the reason for them not sleeping? Right. And on one hand, we understand sleep and not getting proper sleep is going to severely impacted the lymphatic system.

And the way your brain can clear up amyloid plaques in the healing cells. And. But what if the person can't sleep? Then we have to identify what's causing that, right?

So then applying the roadmap, this is kind of the roadmap is it's not you know, it's my roadmap, right? It's kind of the way I do it. And we're all artists, right?

The science and art of practicing medicine. So some of this is just my art of how I see it that makes it more efficient for me to solve problem because, you know, it just helps me.

So the way I see it is that brain function. And this is one of the first thing we learn in function neurology. Neurons have primary requirements to stay alive.

For neurons to stay alive, it requires fuel and activation. That's what we learn, like module one in functional neurology fuel and activation. And then I, I added a third one.

It also has to have no inflammation. Three things to me. So fuel for the neuron comes in the form of oxygen and glucose, right? We all know how important oxygen is to the brain.

Or ketones. Like ketones at alternative sources of fuel, but really glucose is a preferred source of fuel. Right? Most of us don't run on ketones and we can certainly do ketogenic diet and burn ketones if there's a clinical need.

But you know, I think ketone is a is a alternative source of fuel in cases. You know, if from evolutionary perspective, from starvation. But in a well-fed individual, the preferred source of fuel is obviously glucose, not protein and not fats.

Right? So the neurons primary source of fuel is glucose and oxygen or ketones. And so the way we look at that then is, okay, does this person have oxygen problem?

What how would oxygen problem show up? Sleep apnea is is one way that could show up for people. A lot of people have sleep apnea, obstructive sleep apnea.

And then that can just compromise oxygen. But other ways that can show up is that if they just don't exercise right. Exercise is a great way to promote circulation, circulatory integrity.

And many people are just too sedentary and they're missing out on using blood flow and nitric oxide production to stimulate blood flow to the brain, while other people simply just have low blood pressure or high blood pressure.

Hypertension and low blood pressure, they're both equally bad. Right. High blood pressure. Just get a lot of press because there's tons of drug for it.

But nobody's given a drug for low blood pressure below. Blood pressure is just as insidious because that's low perfusion. If you can perfused your brain.

I mean, it's like you're not watering your grass. The grass turns yellow. You don't get blood to your brain. Your brain just shrivels. And a lot of people miss this with surgeries, right?

When you are under anesthesia, the anesthesia itself can be toxic. The whole the surgical procedure is inflammatory. And the hypo perfusion that happens when you're under general anesthesia can also be very harmful to the brain.

And so talking to an anesthesiologist before you go in for surgery to make sure that they keep your blood pressure stable and high enough and also limiting any surgical procedures as you age and really only doing things that are absolutely necessary so that you don't get into those hypo perfusion states if you if you know, if you don't have to.

Of course. Well, and that's a great point. I never even consider that. Thank you for bringing that up. But but I think what's even more insidious than the surgery, because surgery is a one time event.

Some people have like persistent low blood pressure, like ongoing. Abby like that's just chronic. That's that's even worse, right? Because then many times they're not told that there's a problem.

Immune Balance and Neuroprotection

So they're left to like, degenerates. But from having not having enough blood flow and oxygen to the brain, that could be really harmful. The second thing is on that equation is fuel is glucose.

And that comes from the food that you eat. And of course, you know, I'm sure many speakers in the summit will be talking about blood sugar issues. But, you know, blood sugar stability to me is like one of the main things that we need to do to support brain function.

Right. You can't it's got to be the Goldilocks right. Can be too much. Can be too little. Right. Obviously the focus a lot is on diabetes, but hypoglycemia is just like I said, is just as bad.

You need fuel for the work, for the neurons to function. Without fuel, the neurons suffer. And in fact, there's symptoms of hypoglycemia, feeling angry and anxious, hangry and having short forgetfulness.

These are signs of neuronal loss. Like literally when you feel hangry, you literally just said bye bye to some neurons. That's how you have to take it, because that's really what it is.

So, you know, I really work very hard to educate our clients to keep that blood sugar stable. Not too high. Not too low. So that's the starting point for me.

And then we work our way down through digestion, making sure that actually absorbing nutrients, we're making sure that they, you know, they don't have any gut dysbiosis or leaky gut issues healing the barriers.

And we're really trying to control the immune system by not just reducing inflammation. Remember, inflammation is a way for your immune system to kill pathogens.

So we don't have a free hand at all. Like Lord just was given five tons of anti-inflammatories because sometimes you need a little bit of inflammation to kill pathogens.

So it's all in context, right? Does this person have a raging infection that they can't clear in that case? We may want to support the immune system to help them clear that pathogen before we, you know, lay on the anti-inflammatory.

So everything has its time and place paying attention to these nuances can make the difference for someone, whether it getting better or, you know, stuck in a plateau.

Right. It's like you can be doing the right things but in the wrong order. And so having that roadmap of if things are being done sequentially, in what order, that's fantastic. So is there anything else that you want to share with us about the connection between autoimmunity and neurodegeneration?

Yeah, absolutely. And as I alluded to earlier, when you have neurodegeneration, what that what that means in English is that you're losing neurons. Now, remember, just keep in mind that we all lose neurons every day, just like having this conversation right now.

We lost, you know, a few hundred and a few thousand neurons, not because of, like, you know what I said, but but it's a normal process was to lose neuron.

We have the most number of neurons on the day that we're born, but yet on the day they were born, we're not very functional. We pee and poop in our pants.

We can file taxes we can't even stand. So, you know, so the number of neurons is not what necessarily determines function, like I said earlier, is neuroplasticity.

And neuroplasticity is your neurons ability to to be more efficient at what it does. The things that you do on a repeated basis becomes more entrenched and more efficient with use, right?

So and so if you are if your plasticity is greater than the rate of neuron loss, then you're going to be able to maintain function if you're not very neural plastic and you lose a great number of neurons, those are the ones that's going to suffer from the symptoms of neurodegeneration.

So then the question then is what can we do to improve plasticity? I mean, we also got to protect the brain so we don't lose neurons. It's two sides of the coin.

I think a lot of time we think neurodegeneration. We've got to protect the brain cells. Well, we do, but we lose them just as normal part of aging is, well aware.

Aging before its time. Right. How can we protect that? And a lot of that has to do with minding this balance of the immune system, right between inflammatory the need for the immune system to have an inflammation, to clear out cellular debris and the need for the immune system to kind of reach that homeostasis where your brain cells to preserve and not having this excess injury and damage to it.

And a lot of that comes down to, you know, the immune system. And this is why I kind of coined another term called a brain immune gut axis. Inside the brain gut axis, I called a brain you've got axis or the BIG or I call it a big axis, big idea.

And really we can even throw in hormones in there. Right. So instead of BIG, brain immune gut it can brain immune gut, endocrine axis. So then that becomes biggie and I'm a biggie small fan.

So, you know, it all works together.

Where to Find Dr. Kan

But anyways, I think for, for it, the last thing I would say is that for, for people trying to improve their brain health, I think the the immune system is really the central key here because what's causing neurodegeneration is really this inflammatory response and immune system that's being overly aggressive and chewing up brain tissue.

And so what can we do to protect our brain from that? And neural autoimmunity and neuro autoimmunity both can accelerate the rate at which we're losing brain cells.

The way we can help to reduce that neuro autoimmunity is to give the immune system not so much excuse or reason to be on the offensive in attacking things.

Right. So reducing pathogen burden is one way to do that. Reducing toxic burden is another way to do that. Stabilizing blood sugar is another way to think about how your immune system can have no excuse to attack anything because high blood sugar and both and low blood sugar both triggers your immune system to be in a more inflamed state.

So everything's about keeping your immune system even killed, you know, kind of like the old Daoist principle of not too much one way, not too much the other way.

Everything's as balanced as possible is really what we're striving for when it comes to immune system function. Really. Thank you so much for sharing all of that.

So insightful. I want everyone to know how they can find out more about you and what you're up to. Thank you for letting me share. They can find me on YouTube.

I have a lot of just free educational videos, just type Dr. Peter Kan on YouTube. (Dr Peter Kan) The bald headed Chinese guy will pop up pretty easy to find and my website is askdrkan.com Fantastic.

Well, thank you so much for being here, for sharing your perspective. It's been fantastic having you. Thank you so much for having me.