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## Treating and Preventing Alzheimer's Disease is Possible Using Functional Medicine

Announcer:

This is ReachMD. The following medical industry feature titled Treating and Preventing Alzheimer's Disease is Possible Using Functional Medicine is sponsored by The Institute for Functional Medicine

Dr. Hughes:

I am Dr. Kristi Hughes. I am one of our Directors of Medical Education at the Institute for Functional Medicine. Today, I am going to have the opportunity to discuss clinical applications and treatment for patients who are experiencing neurodegenerative changes with Dr. David Perlmutter. Welcome, thank you for being here.

Dr. Perlmutter:

I am thrilled to be here. Thanks for having me.

Dr. Hughes:

Where I would love to start is with your clinical experience. Could you talk about how are you assessing and looking at neurodegenerative changes? What are some of the unique tools and resources that you are using?

Dr. Perlmutter:

Let me take a step back, if I could a little bit, and really talk about how I got to this place in the first place, and that is, you know, as a mainstream neurologist years ago I was a bit dissatisfied with doing what we did. We were great at making diagnoses, but we really had no tools in the toolbox to help people. It was kind of a diagnose and adios scenario. So, I began looking at what else is out there? What can we learn about patients that may be setting the stage for these terrible problems that people get, and I learned that the functional medicine approach looking at multiple factors: nutrition, lifestyle, family dynamics, genetics, etc. were actually hugely relevant in terms of what is causing people to have brain problems in the first place, and even beyond that, when you pay attention to these issues, you can unravel some of these problems that are so darn troubling. You know, in mainstream medicine, for example for Alzheimer's, there is no treatment. There is no meaningful treatment available, and yet we now are seeing evidence that when we look at multiple factors, and multiple areas of insinuating ourselves into a program, we can get some dramatic improvement in patients and that's really going against what I learned in mainstream neurology in terms of what was out there.

Dr. Hughes:

Well, in functional medicine, as you know, one of the unique aspects that functional medicine providers turn to is finding the cause or causes. So, I am happy to hear you stating that, you know, coming right out. What do you think is, if you think about the top causes that you are seeing in your assessments, are there things that rise to the top if you are looking at certain patterns?

Dr. Perlmutter:

Well, mechanistically, I think that the biggest issue in Alzheimer's, if that's where we are, is inflammation and while that may seem surprising, that's what our best literature has been saying for at least 20 years is that these microglial cells in the brain light up and produce these inflammatory chemicals, the TNF, tumor necrosis factor, interleukin 1 beta, all these fancy words, but to take a step back, it's an inflammatory issue. The brain is inflamed as certainly as a joint is inflamed with arthritis. So having said that, we ask then, where does the inflammation come from? And oddly enough, it doesn't seem like it has its origin in the brain, and I am a neurologist, and we are having to look outside the brain. And what literature is telling us, and has been telling us for quite some time, is that there are gut-related issues that relate to issues like Alzheimer's and autism and even Parkinson's. That's front and center in our most well-respected literature that mainstream clinicians are reading. So, the idea of getting out of the brain and looking at the gut, for example, and the gut

bacteria, because that might hold the key, is I think quite difficult for those brain specialists who have felt that really there is nothing south of the foramen magnum. That everything is in the brain and that's where we are going to find the answer. Well, the answer for Alzheimer's isn't in the brain. The answer for autism isn't in the brain. It's in the gut, as a matter of fact, or at least we should be looking there because maybe part of the answer is there. But again, it's the notion of looking to treat the fire and not just the smoke, looking to treat the underlying issue as opposed to the manifestation that we sometimes see.

Dr. Hughes:

Are there certain key things that you are looking for in your assessment to either identify that inflammation or get more specific to be able to identify where is that coming from in the system?

Dr. Perlmutter:

Absolutely, and you know, some of these tests that we look at are tests that doctors are already doing. For example, A1c, let's look at A1c. It's a test that everybody is familiar with. I mean, you have it on television now. Everyone wants to lower their A1c by taking this or that drug. Well, it turns out that published in the journal *Neurology* was a powerful study that correlates the level of A1c with the degree of atrophy or shrinkage of the hippocampus, which we know, then, correlates with Alzheimer's. Wow, what a powerful relationship. The higher your A1c, the smaller is your brain's memory center. So, I find that to be very valuable in terms of understanding the dynamics of sugar metabolism. The A1c is the glycation of proteins, the binding of proteins to sugar, which is what A1c is sugar bound to hemoglobin. But it gives you a sense as to the whole process of glycation that happens throughout the body. Higher levels of glycation set the stage for both inflammation, the cornerstone of Alzheimer's, as well as increased free radicle production that kills cells, damages mitochondria, leads to what we call apoptosis. Now, there are more sophisticated tests I think are very valuable in the field of neurology. One of them, oddly enough, measures the leakiness of the gut. We call this LPS, stands for lipopolysaccharide. Why would I be interested in LPS as a neurologist, because it indicates permeability of the gut? Well, LPS, which is the covering over the gram negative organisms, when it gets out from the gut through the gut lining into the systemic circulation, it turns on inflammation everywhere from the top of your head to the bottom of your toe. Higher levels of LPS are strongly correlated with Alzheimer's, autism, and even Lou Gehrig's disease, for that matter, and even major depression. What is this telling us? It is telling us that there is something very fundamental going on in the gut with respect to permeability as well as inflammation that shows a strong relationship with some of our most pervasive and tenacious neurological problems. So, again, it really solidifies this notion that we have got to get away from the idea of looking in the brain for the answer to our most dreaded conditions. So, LPS is very important.

Other measurements of blood sugar, to get back to that, are really important. For example, a fasting insulin test is really important to understand where we are on the continuum in terms of what most healthcare practitioners understand and that is insulin sensitivity. Are you resistant to insulin or is your body still quite sensitive to it, meaning that the insulin level would be low? Higher levels of insulin, splashing into the 10, 15, 20 range begin to indicate that the body is resistant to insulin. That is the harbinger for type 2 diabetes. Why does that matter to me as a neurologist? Because type 2 diabetes quadruples your risk for a disease for which we have no meaningful treatment and that is Alzheimer's.

Dr. Hughes:

You know, and it is fascinating to hear you say that because we think about how many patients go in to see functional medicine providers who have gut problems, who have been to gastroenterologists who tell them, your diet has had nothing to do with it. There is nothing to do with your diet, right. So, here we have gastroenterologists who won't acknowledge the link between the diet, and here you, as a neurologist, saying that is one of the first things that you are going to be looking at with these assessments.

Dr. Perlmutter:

It's true. And no matter where you enter in the study of functional medicine, you can be sure there is going to be a healthy dose of gastroenterology. I mean, you are not going to learn how to use an endoscopy and take out polyps, but you are going to learn about digestion and assimilation and detoxification, which are fundamentally important, gastrointestinal and liver-related events within the body that play a role in every other organ system including the brain. So, to take a functional medicine approach to neurology has been an absolute game changer. Why? Because suddenly, there are a whole host of tools in an otherwise empty toolbox. This is the way to treat people and there is no going back.

Dr. Hughes:

Well, if you really just shine the light on your notice of the hemoglobin A1c concerns and the insulin resistant patterns and trends, when you sit down and you start to work with personalizing someone's diet or a food plan, are there common themes that rise to the top? Are there certain foods or features of foods that you are counseling and educating patients to adopt?

Dr. Perlmutter:

And you know, we know that sugar and a diet high in carbohydrate is detrimental to the brain directly and indirectly. When I say directly,

because of the effects we talked about on glycation of proteins and inflammation. Indirectly, because of the effects of that type of diet on the gut bacteria that then play a pivotal role in terms of managing inflammation and determining the inflammation setpoint within the body.

The other thing that I think is really critical in terms of the diet that still represents a broad stroke, is the importance of dietary fiber and specifically prebiotic fiber. Why? Because prebiotic fiber is that unique type of fiber that nurtures the gut bacteria, so that our gut bacteria can produce our neurochemistry, can heal the gut lining, can produce the butyrate that reduces the leakiness of the blood/brain barrier and ultimately reduce inflammation.

Dr. Hughes:

So, my key takeaways from this conversation are that, as clinicians, if we are looking at the patient presenting with cognitive decline or a diagnosis of Alzheimer's, some of the tools are right there in front of them. Their labs that they are already using, their resources that they have at their disposal, and the key is to really look for the cause or, as you have already said, the cause of the cause, you know, to be able to get to that point.

Dr. Perlmutter:

Wind the tape back a little bit and ask how you got here and target those ideas. What we didn't mention, but I want to be sure we cover, and that is the fundamental importance of aerobic exercise in terms of the brain. Why? Because aerobic exercise is also a modulator of gene expression. It turns on a gene pathway that makes something called BDNF. That sounds complicated, but brain-derived neurotrophic factor enhances the growth of new brain cells exactly where we need them. It enhances the connection of brain cells. It helps protect brain cells against trauma. It actually increases telomerase activity and helps control appetite. So, it does a lot of great stuff. And the best way to enhance BDNF is to aerobically exercise. Aerobic exercise is associated with an increased size of the brain's memory center that correlates perfectly with the increased level of blood measured BDNF. So, you've got to do it.

Dr. Hughes:

So, I am hearing you talk about both there is the genetic predispositions that are unique to each individual, and then there is that expression of the genes related to their environment.

Dr. Perlmutter:

That's right. And you know there are Alzheimer's genes. These genes do not say you will or won't. Are they associated with a predisposition? Sure they are and I am not going to deny that, but look, if you live to be age 85, your risk for Alzheimer's is 50/50 anyway, so that said, let's do everything we can do right now.

Dr. Hughes:

I think it is exciting to hear you talk about some of these challenges that we are dealing with, but to really put forth from your experience and your intimate knowledge of the research in the literature, there's options, there's solutions. There's new tips and tools that we never had before.

Dr. Perlmutter:

You are right. There is some really good news and we need to shout it from the mountaintops, and that is that we can change our health destiny. And functional medicine is the way to make that happen. Functional medicine embraces the notion of the web. Of looking at all kinds of factors that need to be understood so that we can leverage these different areas of lifestyle, of genetic predisposition, of relationships, of meditation, of understanding a person's early life experiences. All of these things come together to determine what our future is going to be like. And unless we pay attention to the web of interacting issues, we are always going to be very, very myopic and be extremely less effective.

Dr. Hughes:

Well, thank you for sharing all of your clinical experience and your wisdom in this area. You are clearly one of our lead opinion leaders in this arena in functional medicine, and I am just really grateful that you took the time to visit with us.

Dr. Perlmutter:

Well, I appreciate having the time with you, thank you Kristi.

Announcer:

The preceding program was sponsored by The Institute for Functional Medicine. This is ReachMD. Be Part of the Knowledge.