Why Mitochondria Are the Missing Piece in Autoimmune Recovery Transcript

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Introduction and guest background

Welcome to another interview for the M. S. and Autoimmune Summit. I'm Doctor Terry Wahls, your host, and today we invited Doctor Lisa Portera, who is an integrative, chiropractor who I've known for many years.

We jointly teach the bioenergetics module for, the Institute for Functional Medicine. She's a wonderful clinician, a wonderful teacher. And here we'll be talking about one of our favorite topics, which is mitochondria and why they are so vital to our health.

Now, Doctor Portera, is there anything that I left out of your, bio that we should include? Oh, goodness. Well, thank you, Terry. First of all, for having me.

Doctor Wahls, you are such a joy to work with. You are such an inspiration. And just being able to walk beside you on your journey has just been an absolute joy, and I think is really such a demonstration of what's possible when we apply mitochondrial therapies, and that principles behind mitochondrial therapies to autoimmune disease.

So in my clinical practice, there's some similarities from the perspective of, you know, being an integrative doctor of chiropractic and an educator, I really saw over time that people's pain syndromes often had this underlying autoimmune component to them.

And when we didn't address that and really get underneath it from a systems biology lens, that we really were only able to mitigate pain on, you know, a very inconsistent basis.

And when we really we looked at the root cause, that really was the driver. So that really led me forward and so much of my work. And then I had really transmitted so much of the focus in my practice to autoimmune related pain disorders and, inflammatory bowel patients, along with other pretty, you know, challenging patient cases.

So and also seeing those earlier in life with kids. Yeah. So let's talk about mitochondria and what they are and why it's so impactful when we help kind of function better.

You know, it's interesting because we all think of mitochondria as the powerhouse of the cell. And that's our high school and college and med school biology.

Right. And that's very true. And it's a very, very important aspect of it. But what we're now seeing emerging in the science is that mitochondria are actually signaling systems.

And mitochondria are reading what the immune system is doing. And the immune system is actually reading what the mitochondria are doing.

Mitochondria, immune signaling, and stress

So there's a bi directional arrow between immune function and mitochondrial function. There's a bidirectional arrow between what's happening in the gut, the gut microbiome, how that's impacting mitochondria, how short chain fatty acids, which is one of the reasons I think, you know, this is my this is my big plug for your diet because I think you are such a incredible leader in being able to demonstrate how diet impacts the gut microbiome, the immune system and the mitochondria all at one time, very comprehensive approach.

So being able to now look at mitochondria through this new lens. And also there's new information through some of the work of Doctor Martin Picard out of Columbia University showing that how our stress impacts mitochondria specifically and how that becomes now a new marker and also a new evaluation tool that we need to be using in clinical practice.

Okay. So our mitochondria generate, a lot of ATP, the power that power our cell chemistry. Yeah. So in that process they're also communicating sending messenger molecules that go out to our immune cells that interpret how healthy mitochondria are and then react.

And then there's a third component which has to do with the mitochondria. Understanding my level of stress. And and I want everyone to remember that for millions of years we had acute stress, had to run like hell to get away from our enemies or run incredibly fast to catch our food.

So we would we'd certainly have some periods of severe stress, but then we'd be over it and we would have periods without stress. Yes, but that's not the environment we live in now.

Can you talk a little bit about this new term that that we hear about in functional medicine? Allostatic load? And I don't think my the public has heard about that term. Yes.

And you're so correct. You know, short term stress has a purpose. And it's a really helpful purpose. And the whole point of it is to be able to, as you mentioned, recover from it.

This is part of the, you know, the book Zebras Why Zebras Don't Get Ulcers. And really looking at, yes, we're supposed to have a strong response to stress.

And it's the chronic persistent stress that actually is the issue and the problem. And that's what allostatic load is. So Allostatic load is the accumulative stress over time that we're dealing with on a daily basis, that then becomes a yearly basis and then a life time basis.

And the things that contribute to allostatic load might be to stressors, but if they become more chronic long term stressors, then they're adding to that cumulative load.

So sometimes we use the term and functional medicine the total toxic load. Like what are all the things that are contributing to our toxic load. We need to start thinking of allostatic load in the same way.

So this is everything from early childhood events that may have been adverse, events that can trigger an inflammatory response or shape the brain in particular ways.

But it's also what's happening in a person's daily life. How well are they connected in their community? How are they connected to others? What is their diet and their lifestyle impact?

All of these things are contributory factors to our total stress load, our total allostatic load. So I think since many of us know that we are stressful going to work, I have to navigate my relationships with people in my office suite.

I have to navigate just how I get to work and get back home, and then my household responsibilities. And so there are a lot of annoying things that I have to deal with every day.

Sometimes they're a little annoyance, sometimes they're big annoyance. Yes, I yeah, part of what I'm asking people is do they have periods without stress?

How would they have periods of joy, comfort, connection with their adult companions may or may not be romantic companions with their kids, with their pets, whether it's their dogs, their cats, their pet turtle, you know, whatever animal companions they have in life.

Yes, in the absence of those moments of connection safety, that's when this allostatic load becomes more and more and more burden. So to submit to your experience, Doctor Porter, I'm solutely and that's I think the piece that we have to really help our patients understand, help the public understand is that stress is inevitable.

But how are we buffering that? How do we actually create buffer systems throughout the day and everything that you mentioned, connection, being able to interact with the things that are most important and the people that are

most important to us in our lives or our animals.

Reaching out on FaceTime. If you need to reach out to family and friends, creating daily habits that help to buffer this allostatic load.

Allostatic load and buffering daily stress

Because what we're now learning. And there's two things I want to say about that. What we're now learning is through the work of Doctor Picard at Columbia University, is that the mitochondria themselves have their own allostatic load.

They're actually sensing and reading our allostatic load and responding to that. So it becomes now a motivator, hopefully, for all of us to be able to say, wow, you know, if I'm really going after having healthier mitochondria, I need to look at these aspects of my life that help to buffer my stress and create a higher priority for those things in my life.

And it takes time, you know, we're all human. We have to sort of reorder our priorities in our activities, in our daily life, to be able to say that's more important to me.

That's important for my coherence of my nervous system, for my heart coherence, for regulating my autonomic nervous system. And I think that's what I'm hearing you say as well.

It's like taking those breaks and giving a sense of safety in life instead of constant push and stress, because our mitochondria are listening in on that conversation.

Okay. So we should we talk about the gut as well. Is gut health interacts with all of this because we're learning more and more that the microbes in my gut talk to my immune system, talk to my brain.

Are those microbes talking to my mitochondria to those microbes are talking to our mitochondria? It's just fascinating to me. And what's also interesting is those microbes, if they are balanced, healthy microbes, they are producing hopefully through our diet, our higher fiber color, polyphenols, creating more and more short chain fatty acids.

Those short chain fatty acids actually speak to the mitochondrial inner membranes and help to create mitochondrial biogenesis. Mitochondrial regulation.

So what's happening in our gut is actually impacting our mitochondrial function through a number of different pathways. Short chain fatty acids are very well documented aspect of that.

Also, when we have dysbiosis in our gut, we have more leakiness. In our gut, we have that increased permeability. So here's where I want to take us for a moment.

Let's zoom in on those gut lining cells. Those gut lining cells are called entero sites. They turn over very rapidly. They need a lot of energy to do that.

They need a lot of healthy mitochondria. When we have mitochondrial dysfunction, the barrier system in our gut lining actually can become more permeable, more leaky.

Just because it's struggling to repair it takes a lot of energy to repair both the internal side activity and the tight junctions. So isn't that fascinating that, you know, we think about our mitochondria as providing us energy, but it's giving all these cells of repair and cells of function the energy they need to do to optimize our gut function, which optimizes our immune function.

Right. When we're in a healthy gut state. So our mitochondria are really vital for repairing that leaky gut and for have that part to work well. We also want to have the correct microbes in our gut.

So that's really tied into what you're eating, folks. That's why eating a lot of non-starchy vegetables and berries so, so good for you. And making sure you're pooping snakes and that rocks.

And that the purpose is coming easily without straining. If it's too hard to poop, you need more fiber. Absolutely. I think that just knowing that also the fiber that you're eating and you're working toward, like including more and more in your diet, I love what you talk about all the time, Doctor Wahls, about expanding the diversity of the fibers that you're eating, the vegetables, the fibrous vegetables and fruits to be able to fuel the good bacteria to make those short chain fatty acids.

So we have the tools to repair the gut and to fuel the mitochondria. That is really, really powerful. You know, everyone is, as you're listening. Everything is interconnected.

Our mitochondria are vital parts of ourselves. They are vital in that communication with other cells. And if our mitochondria are not happy and functioning, the function of our cells slowly deteriorate.

And the things that titrate the first, it's going to be your brain, your eyeballs and your retina and your heart. And for many of us, if we have visual symptoms, if we have pain, if we have low anxiety mood, these are fatigue.

These are signals that you mitochondria need to be repaired. And from your standpoint, Doctor Porter, what are the things that are most powerful to help repair those mitochondria?

Gut health, microbiome, and mitochondrial repair

Well, the first one I'm going to say is sleep. Because without sleep, we are human beings who aren't able to make good lifestyle choices and sleep impacts every system of the body and all of our lifestyle choices.

So getting at least seven hours of sleep per night, 7 to 9, the studies show giving ourselves a chance to really move through those sleep cycles in an appropriate way, and to be able to hit that REM sleep and that deep sleep long enough for repair.

So sleep also helps to repair the mitochondria and refuel our system. Also, when we don't sleep well or make sleep a priority, it's easy to think we're fatigued for other reasons.

But sleep, think sleep and mitochondria are best friends, so we want to make sure we're starting there. And oftentimes as we start to to improve our capacity to do daily activities that improve our mitochondrial health, our sleep improves too.

So it's a conscious choice to get ourselves to bed and rest. And, you know, make sure we're decreasing blue light at night and all those things that keep us awake so that we move into a deeper sleep cycle.

But having activity throughout the day is important. Now, if you're in pain and there is limitations to that, we have to get us, our bodies moving in spite of that.

So we find some alternatives. Swimming. My number one way to go, because we take the body and we put it in a non gravitational setting where pain is often reduced, and mobility, even if it's just walking in the pool, stretching in the pool, moving our joints in the pool.

Let's get started. Right. That's what's most important. Chair, yoga chair, movement. Things that we can begin with that get us moving and get our joints moving and start to build our muscle strength so that we can take the next step and the next step and the next step.

Definitely. Sunlight in the morning is so important. Bright light in the morning. And if it's the winter months, then maybe you get a happy light and you get the light inside your house to to start that regulation and get those signals going.

But I know you are a fan and so great I been able to do contrast therapy. I love watching you swim and go out to the snow in the winter. It's one of my favorite things that you post.

And like, here she goes again. Okay, how well am I doing it? That's so I'm very motivated by watching you live those aspects of building and rebuilding our mitochondrial resilience, our diet is number one in my book.

Diet and sleep are really like hand in hand because we need that fuel for our mitochondria. We also need enough lipids and healthy fats in our diet to protect our mitochondrial membranes.

So all of those things are critically important exercise to your tolerance, but build toward being able to increase your exercise in a way that works for you.

Are there any supplements that help support those mitochondria, and what and which ones do you recommend? Yes. So there's some basic foundational nutrients that we need, you know, a good balance of the B vitamins.

We need magnesium. Those things are extremely important and essential fatty acids acetal l-carnitine and acetylcysteine those things can be really, really helpful for mitochondrial function and have been shown in the research to really support mitochondrial biogenesis.

There are other specifics that can be helpful for patients that have particularly mitochondrial membrane damage. So when there's been a lot of oxidative stress, we really want to go after the phospholipids, but not just phosphate the cooling.

We want a blend of phospholipids. I like formulas that make it easy for the patients to be able to stay consistent. So one of the things I love that research nutritionals has is something called ATP 360, which has the micronutrients and also has the phospholipids all within the same formula.

So phospholipids are the types of healthy fats that are on the membranes of yourselves. And they form these what we call fat layers or lipid layers to allow the cells to communicate, to allow nutrients and to exchange nutrients.

And those lipids are really very, very important. Those are the healthy fats that are very important to build healthy membranes for all of your cells, particularly your mitochondria, as well as all cells and your barrier systems like your gut barrier, like your brain.

Your brain is mostly fat. It has a lot of these healthy fats and phospholipids within it, and they're really very special kinds of fats. They're not in vegetable oils for example.

So it's a highly specialized fat that has a water soluble part and a fat soluble part, which makes them unique.

Lifestyle strategies for mitochondrial support

A little harder to find. Get exclusive from your diet. As we get older, we don't have as many. And so our cell membrane health declines as we age. And I'm very mindful of that.

Now that I'm surrounded by hair stream white, I pay a lot of attention to my phospholipids. Now back to you, doctor. So yes, I agree it's really important.

And if you've had any kind of trauma to the brain like a TBI, a traumatic brain injury or many concussions in sports or things, over time you may need for a period of time higher levels of phospholipids until things start to balance out, and then you can take a lower amount more consistently just as a maintenance dose.

But as doctor was pointed to, it's it can be difficult to extract them from the diet as well as, as we age, being able to really absorb them and utilize them.

So they're really helpful tool for our mitochondrial membranes, particularly the part of the mitochondria. This inner

membrane where we are actually producing the ATP inside that inner membrane.

We need that health. So so you have a supplement that has some of the key vitamins, if I understand this correctly, carnitine some of the minerals as well.

And then some of the minerals, some of the vitamins. And this formula is called ATP 360. It addresses multiple mechanisms of action. So we've got the B vitamins.

We have membrane support. We also have support alpha lipoic acid magnesium and acetylcysteine. So we get a lot of the nutrients that are very important and critical for energy production.

ATP production inside the capsule itself or the three capsule is one capsule a couple capsules. What what's the capsules per day? Three capsules predict.

And would I take them all at once or do I sprinkled throughout the day? Well, generally we advise taking them all at once, but it doesn't have to be that way.

So sometimes we have patients who are sensitive and they need to break it up a little bit, but generally it's very well tolerated. And the thing that's very exciting about this formula is that it has had peer review, published journal research on it to indicate and show that outcomes for patients in reductions of fatigue, energy improvement about 52 improvement in energy within 60 days.

So that's really, really quite significant. Yeah, it really is mental functioning again like more clarity, less brain fog and being able to have improved sleep also.

Supplements for mitochondrial function

So those are all published in the peer reviewed journal research from 2021. Again, these are a simple intervention and I think you could take it whatever diet you're following, if you're doing a mediterranean diet, if you're doing a periodic diet, ketogenic diet, intermittent fasting, you could add this.

And even if you were still doing the standard American diet, I guess you could add this with. And then I encourage you to steadily work on eating more vegetables and less sugar, less white flour product.

And I think you'd see improved energy, improved mental clarity, and probably better mood. Yes. You know, thank you for saying that because when I view nutritional supplementation, I'm always thinking about the individual.

And they're very excellent tools, particularly in the beginning while someone is transitioning their diet. Right. So it's giving you that extra boost.

But they're not meant to be taken in place of your diet alongside, as Doctor Wahls has mentioned, particularly if your needs are higher. But we definitely need to be working on the daily food intake and transitioning it toward exactly the diet that she's described in the wahls diet, because it's just so impactful.

And starting with those vegetables, the colors, the fruits, getting the fiber, helping the gut heal. When we combine all of that, you know, that's the sweet spot.

That's where the healing signals are really being amplified. You know, there's peer reviewed literature that people with chronic disease, we have a diet typically with, fewer B vitamins, less magnesium, less essential fatty acids, less zinc.

And all of those nutritional insufficiencies increase the possibility of more symptoms. And those people with multiple sclerosis and our immunity. A similar observations have been made in peer reviewed literature that our diets have less antioxidant capacity.

So we're having less color, less essential fatty acids, less B vitamins. And the more severe the symptoms are, the greater the probability of these nutritional insufficiencies.

So what's so fascinating about that? Excuse me, I don't want to interrupt. You want to add to that those nutrients that you just heard Doctor Wahls name are the very same nutrients that your mitochondria need.

Isn't that insinuating? So step by step, work on correcting this nutritional insufficiencies if you're having symptoms, well, it to your multiple sclerosis or immunity.

Nutrition is part of how you get out there, and better nutrition is part of how you can reduce your symptoms and have more energy. So I certainly encourage you to check out, the supplement and let's say it, ATP 360, ATP 368.

I might add one additional to that, because we also have peer reviewed research on a form of gluten found that has been shown to be absorbed intracellular, not just in the bloodstream but inside the cell.

And that was that was just shown through after about two years of working on the formulation to really get it right. And the, publication, this research was done through Penn State University.

So that's another thing to check out, which is tri fortify. Now, glutathione is a master antioxidant. It's really very powerful for protecting ourselves and raising interest.

Other gluten iron is not an easy thing to accomplish or measure. So I'm very impressed that you guys have been able to do that. And so we have the ATP 360 and the two.

The science formulation is what now Doctor Patel named tri fortify tri fortify okay.

Where to learn more and closing

So I think these two supplements could be certainly, profound nutritional boost for anyone who's still having some symptoms related to their multiple sclerosis or autoimmunity.

I would encourage you to check them out. And I would start with one and then wait a few days, start the second supplement. So be sure that you're storing it well.

And then in 60 days you could reassess your symptoms to see had they improved or not. And be sure to ask your loved ones to rate, because sometimes they have more insight to our symptoms than we do, so be sure to talk with them.

Let them know that you're doing this little experiment so they can, and the symptoms that you're tracking, so they can track along with you. I love that, I love that so much.

And don't forget to do the daily things that help to buffer your stress. Yes. Okay. Doctor Portera, where did people go to find out more about these two wonderful products?

Researched nutritionals. It's ed researchednutritionals.com and you can pull up the website and look at, everything there. And actually the there's a summary of the research that's been done on both of those products on the website as well.

Wonderful. Thank you so much. And I look forward to seeing you again in the very near future. Thank you so much. Such a pleasure to be here.