Introduction to David Haase and Plasma Exchange

Welcome to another episode of the Multiple Sclerosis and Autoimmune Summit. I'm Doctor Terry Wahls, your host, and we're going to hear, wonderful interview with, Doctor David Haase.

Now, David Haase has a dual board certification in family medicine and integrative holistic medicine and certification. In the qualification in a Ferris's he's a Vanderbilt, University School of Medicine graduate.

He completed his residency at Mayo Clinic Rochester, and he serves as lead faculty for the Institute for Functional Medicine. And actually, David, I, our faculty, together for that neuro, the bioenergetics module we've been teaching together for many years.

He founded the Maxwell Clinic in Brentwood, Tennessee. And he's now leading in square foot facility dedicated to advanced nutrition, diagnostics, brain optimization.

He pioneered the hope TM, habitat, optimizing plasma exchange program, a really a cutting edge treatment designed to enhance brain function and slow cognitive decline.

He treats Alzheimer's dementias in severe autoimmunity. This is, he's authored this wonderful book, Curiosity Heals the Human. And, let's welcome Doctor Haase.

This is going to be a wonderful conversation. You know, David, I, I'm so looking forward to our conversation. And we're going to talk about plasma exchange.

for all the listeners, plasma exchange has been used to address a wide variety of neurological conditions for a very long time. It it's been super helpful.

It's also very helpful for as a longevity strategy. So, David, what? Why don't you tell me more about your experience with plasma exchange and how you got into this?

Yeah, well, how I got into. It's kind of funny. I had a deep, bad patient of mine who was asking. I was asking, what do you want to accomplish by working together?

And he told me, I want to live forever. And that's a big, big order. It took me back for a bit, but then I said, you know what? If I would suspend reality for a moment and see what, what science is out there in longevity.

And I was about 8 or 9 years ago, and I came upon the science of para bioscience. Para bioscience is an amazing studies. So interesting. They took mice, a cloned mice, an old mouse and a young mouse, and they sold them together.

So the poor little critters had to run around the cage. So together by that, they're, on their side. And they shared a micro circulation. And what was shown.

Then after about a week, an amazing thing happened. The old mouse started to turn young and. And so this is true rejuvenation, reversal of osteoporosis, reversal of fatty liver, of aiding normalization of T cell and B cell subsets in the immune system, regrowth of hair, return of normal smell, regrowth of brain neurogenesis and muscle recovery.

So but all that showed that if you put old cells, if you can clean, do something to the circulation, you drastically change longevity. Well, let me stop for a moment.

So, again, the listeners, the, this is a known, scientific, concept that old mice can be euthanized by getting blood

from the young mouse. Which makes me ask, what happens to the young mouse?

Do they get old?

How Plasma Exchange Works

As a result of being hooked up to the old mouse, I would say it euthanized rather than euthanized. Yeah, that's probably better. That's probably a much better term.

Thank you. David. You're welcome. And so the young mouse, after about seven days, it can get stunted. It's it actually takes on a toxin of being exposed to the plasma of the old mouse. And.

But then after about a month, you separate them. The mouse lipped young mouse lives to its normal expected lifespan with no injury. The old mouse lives to somewhat of an extended lifespan.

But what was so interesting about this animal? Well, gosh, we could never do this with humans. And lo and behold, I was introduced to the the science of a forest.

And this was about eight years ago. And afarensis is the medical specialty. I hold the qualifications, a specialty in a forest now. And that is when you take blood out of the body, do something with it, and then put it back into the body.

That is a for rhesus. You can manipulate red cells, white cells, plasma, all kinds of things. And therapeutic plasma exchange is where you remove plasma from the person's body, which is the liquid part of the blood, and then replace it with a clean replacement fluid.

And then that clean replacement fluid creates a new habitat for the cells in the body. And this has been the standard of care for severe autoimmune disease for many decades.

This therapeutic plasma exchange which so it created a whole bunch of questions. You and I had both been working in the field of autoimmunity for a long time, and and especially its effects on the brain.

And to recognize that I went to medical school at Vanderbilt. I did my residency at Mayo Clinic, and I had never come across therapeutic plasma exchange as a therapy in in my patients.

And I've I've gone out there. Many doctors just aren't even aware this therapy exists. And I feel like one of my first goals is to help people recognize that there is a therapy that drastically and very quickly can help in cases of severe non controlled autoimmune disease of many types.

And now we see that it has benefits. So for the listeners if I if my medical team said you know what you got bad disease. Let's do plasma exchange. Could you help our listeners understand what that process looks like?

Sure. Absolutely. It's a standard medical procedure available in every major medical center across the United States in the world. And it's simply where, two I. V.

accesses are put in. You have a big I. V. access in one arm, and blood is pulled out of the body. It gets mixed with an anticoagulant. The red cells and white cells are separated from the liquid part of the blood.

And the liquid part of the blood that contains your antibodies contains cytokines, inflammatory signaling antigens, all kinds of things that perpetuate disease is removed.

And then as a replacement fluid, you have to replace that plasma or something 5% albumin, which is a pharmaceutical albumin, clean, FDA approved. There's no antibodies in there.

There's no spike proteins. There's no there's a lot of other things that are it are not in the albumin that we're put in.

And then that goes back in the other arm and just have a do it.

Hang on, David, people may not know what albumin is. Thank you. Albumin is the major protein that exists inside your plasma, which is the liquid part of your blood.

And it is responsible. It's a sponge. It holds on to hormones. It holds on to toxins. Amyloid beta and Alzheimer's attaches to albumin. We see albumin is what holds on to salt and water and basically keeps the liquid part of your bloodstream in your blood vessels, so it doesn't just ooze out into your tissues.

Very important. And you tell Terry it is the molecule that has the most antioxidant potential in the bloodstream. So it is a portant antioxidant that occurs.

And we're constantly making it and cleaning it up. And that process gets more challenging as we get older. Okay. So, I got a big IV put in my left arm.

The, blood is taken out and it's washed basically in my right arm. I'm getting my red blood cells back, my white blood cells back, albumin. And then there's probably I. V.

fluid that's added with that albumin. It's the same concentration that red blood cells are at the same concentration. Going out and coming in, correct. Yeah. I'm not.

So I'm not getting anemic doing this. You're not getting anemic and you're not losing blood volume. We can control exactly what goes in and goes out down to the individual CC.

And, it's a very precise process. We actually have an augmentation fluid that replaces a whole bunch of additional things that were missing in the original plasma. But.

So what's in the augmentation fluid? Well, that's customized to every single person. We're actually this is really one of the beautiful things about plasma exchange.

Is it really proves a fundamental premise of functional medicine. Functional medicine. You know what, doctor Sydney Baker, kind of our poet laureate of functional medicine, came, you know, said, you know, you get and you're rid, right?

You remove the bad stuff and you add in the good stuff. And that is the essence of enabling the human, which we're designed to heal. So how do you best enable a human to heal?

That's what we do. So removing the bad stuff is the removal of the plasma we replace in the albumin, etc. but then what an individual needs to be replaced is highly dependent upon that person's individual deficiencies and challenges.

Personalizing Treatment and Immune Effects

So nutrients, minerals, signaling, proteins that component is highly individualized in our art therapy which we call hope habitat optimizing plasma exchange, where we try to really, really apply the functional medicine principles of not just take out the bad, but also add in the good on a highly personalized way.

Okay, so let's say if I come down to Sue, David, I say, look, my plans to thrive to 120, still doing my research. You know, watching my, children and grandchildren, thrive.

Maybe even my great great grandchildren. And you say, okay, Terry, I'm down with that. So how are you gonna decide what the, secret sauce is that I would need?

In the plasma exchange? Well, as always, the most important part of any medical intervention is the history. You know, listening to what that person has gone through.

What is their. What are their unique challenges and diagnoses? Some individuals are an autoimmune cauldron. Some individuals have profound nutritional deficiencies.

So we first start with a good intake and acquisition of all medical records. And then we want to do some blood testing to see, you know, what are the major factors that are going on.

Is this an autoimmune process, a nutritional process, a toxic process because plasma exchange, we don't really treat it as something that's done in isolation to the treatment of the whole person, like for instance, in multiple sclerosis.

I mean, what what is it? You know, the we have literally seen people who have been resistant to their high dose steroid burst. They get referred into our center because we have the largest private afrezza center in the United States right now here in Nashville.

And we go through a series of plasma exchanges, and you get to see how those individuals respond. It's we've been able to do some single cell transcriptomic studies, which are measuring how do the individual immune cells change behavior.

And it turns out that when we remove when we remove some bad substances, add in good things. The cells behavior changes, the genes change their expression patterns.

And when plasma exchange is first thought of and like Ms., it's often had this idea that we're going to remove the antibodies. The antibodies are the bad part because the antibodies that are autoimmune are floating in the bloodstream.

We don't remove any of the T cells, but we know the T cells have a high degree of involvement and multiple sclerosis. Well, it turns out when you do plasma exchange you change the behavior of the T cells.

You change the behavior of the naive, T lymphocytes. So you both calm down the immune system on a cellular basis and then also cause it to rejuvenate, actually shift more towards a younger immune pattern.

Now, there's a probably help our listeners know what T cells are, and B cells are because they may not fully understand that. Sure, in autoimmunity when the body is attacking itself, it's the immune system that is somehow dysregulated or is misfiring.

And we have two major components of, well, we have many components of the immune system, but two of them are the B cells, which secrete antibodies. Those are usually laboratories that are drawn in the bloodstream.

Hashimoto's disease we think of anti TPO antibodies. And then the other part of the immune system are cells. And the T cells are the cellular part of autoimmunity.

So there are two sides one or kind of B cells make molecules T cells recognize other cells as a cell. And so we might think of and do a very good job of that.

The B cells are the part of the adaptive. Those are the antibodies that help me be prepared to fight off infections they're already been exposed to. So they're very helpful at maintaining resistance to reinfection from an organism.

The T cell is sort of the first line of defense. We call that the innate immune system. And we also know that that is a big part of what's driving up all these inflammation molecules in the brain, keeping the microglia activated, making for new lesions and new symptoms for us.

Yeah, it's it's really complex because there are some of the B cells that are there for your innate immune system. And some of your T cells are also for your acquired.

So it gets messy. It's just it's hard to be honest. And when you discuss the immune system takes a lot longer format

than this to be accurate. Right? It absolutely gets gets messy.

Many of our physiologies are deeply interconnected and to think that you can discrete a single step is hard, which is also probably why it is very hard to design a single drug other than for an infection.

That will fix everything, because our physiology is so deeply interconnected that drugs designed to block one step very effectively don't change the health as well as we would like, because our physiology is so deeply interconnected.

Yeah. Beautifully said, beautifully said. And what I'm so fascinated with how do we change cellular behavior. Because really when we think of autoimmune disease, it is a cellular behavior.

We're also doing some exploratory work with an overseas stem cell organization that's doing that, helping us produce T cell vaccines and I think that the T cell vaccines were a very exciting thing back in 2011, inside the auto and the mess world.

And then they hit us. They just stalled out. And I think there's a lot more opportunity for those coming forward where we can actually reprogram the body to be less allergic or less reacted to self.

I think there's huge opportunities with autologous stem cell reprograming for repair of tissue. But cells, cells, cells like what we do with functional medicine is we're we're creating a healthier habitat around the cell.

So the cell behaves differently. And that's what habitat optimizing plasma exchange seeks to do quickly, where functional medicine is really to help do those things long term.

Okay. So we're to sort of go back to the imagination of my coming down seeing you. You do a very careful history, of everything that I've been exposed to, my timeline, you draw some blood, probably to get a sense of a nutrition in that will help you design what you think.

I would be in that secret sauce, and it's going to add back. It's also, you know, what frequency. So we'll often do a initial educational consult that's to check in and see if somebody really is a candidate and getting laboratories from that individual's previous doctor.

And then it's also important not just to think of what the composition of replacement fluids would be, but also what is the timing, how many plasma exchanges to do, how frequently to do them?

And then what markers are we going to track to see? Are we being successful? I mean, I think it's very important for us to drive towards results we have been because we have people coming to us because plasma exchange has been helpful.

And in cases of long Covid that haven't gotten better, certainly other autoimmune conditions that are going on, we have individuals who come to us because they recognize the longevity benefits.

And but my main driver is really how do we use plasma exchange in dementias?

The AMBAR Alzheimeru2019s Study

Because we really need to talk about the Ambar study a little bit, because this is something that just got covered up by Covid, frankly, and it's a monumental study that the world needs to know about.

Okay. So tell us about the Ambar study. And what was that, a tickler? Yeah. Yeah. I because I mean, well, the amp, our study came out in July 2020. Now where there are a few things going on at that time.

Right. The world was shut down. The place was in chaos. We are all none of us were thinking about how do we slow the progression of Alzheimer's disease?

Everything was around Covid and and so this study was monumental in the field of a aphorisms, which is a highly technical field. And there's not many physicians who are trained in it.

This is the largest study ever performed in the in the in the field of apheresis, more individual procedures than any other study. It was a study to see can we slow, stop or reverse Alzheimer's disease by giving people plasma exchange on a repeated basis as exciting as can be, and it turns out that there is a over 61% slowing in the rate of progression of individuals, with even what we would consider advanced Alzheimer's disease.

And in individuals that had mild Alzheimer's disease, there is a trend towards actual improvement. Now, this was not looking at any of their other fundamental underlying causes of dementia.

This wasn't this wasn't doing anything else except plasma exchange. And when you have a 61% slowing in the rate of progression, that's huge. If we think of some of the monoclonal antibodies that have recently been approved, those are typically around 20 to 25%, a slowing in the rate of progression.

But as opposed to those that have substantial risk with regard to white matter, lesions in the brain, plasma exchange is incredibly safe. It's technically challenging to do for the competition side, but it's incredibly safe for the patient.

So the the potential downside is tremendously low. So this they actually studied over five, around 500 people under the study. It was a multinational, multicenter, placebo controlled trial.

So people thought they were getting plasma exchange. And weren't they set up the machines? Very difficult, to do. And it showed very clearly. Improvement, slowing in the rate of progression there.

Another reason it didn't get a lot of press is that one of their primary markers had a p value of 0.06. So so here they had all their their primary and secondary markers all going the right direction.

But they they missed the definition of statistical significance on one marker. And you and I know that what that p value means is that instead of one there's a 1 in 20 chance of that.

That study being the results being from random chance, it was a instead of a 5%, five out of 100 risk of it being a, a random finding. It was a six out of 100 chance of being a random finding.

But anyway, it didn't get the result, the attention it deserved for many reasons, because it's a transformative study that could make a world of difference to people with Alzheimer's disease.

I'm curious, how many exchanges did people get? So, they got one exchange per week for six weeks. And then in Ambar study, they actually went to taking a mini exchange.

So not even a full exchange. And they did that once a month, then for 18 months. So this is a course over 18 months. It's very clear that the more frequently you get exchanged, the larger the volume of the exchange, the better the outcomes, in general.

So there's of course, you can do too much, but we have created algorithms based on what is that patient's clinical condition as to what would be the optimal frequency and timing of that individual therapy.

So I'm sort of guessing that there's a more frequent exchange early, and it may become less frequent, in a maintenance phase at some point based on AI.

And it has a lot to do with how much autoimmunity is present. So, you know, an individual that has a really high autoimmune burden, we're likely going to want to do more exchanges more frequently.

Initially, if there's an individual who really has an atrophic issue and we're trying to turn on neurodegeneration, but they don't have as much autoimmune burden, we can go slower.

And if individuals have a primary vascular issue that also is more important to have regular therapy stretched out over a longer period of time. So we've we've devised a platform to actually track these outcomes because and then to network with other clinicians across the United States and the globe so that we can start improving exactly what therapy is best for what person.

It's a, time consuming, it's expensive. It takes is technically challenging. So when we recommend this, we want to make sure that there is the greatest potential for benefit, for an individual, for that person, if they're engaging in the process.

And so I'm thinking about the most patients most often, we're getting a MRI surveillance at some frequency that tells my treating neurologist and me of course.

Do I have new enhancing lesions? The old lesions stable. And then, of course, my neurologist, you know, does a physical exam. And so are you for your Ms. patients.

Are they getting surveillance MRI to see what's going on, or are you are you just relying on the more functional medicine biomarkers? Oh, no. It, it for each individual case.

Tracking Outcomes in MS and Brain Health

You know, we will set up what are our success metrics. And very frequently we're the consulting group for these individuals coming in from across the United States.

So oftentimes we're working in conjunction with their primary doctor, many functional medicine clinicians and patients to us for plasma exchange. And in that case, we would coordinate their primary patient, aspect.

When we're in one of our research protocols, we'd follow the protocol like for instance, an Ms. patient. It really we're so frequently co managing those individuals.

But when we have take your own patients. Absolutely. We track them with neurocognitive studies and MRI. We're very interested in MRI volume metrics and lesion quant.

I mean I think it's often needing to see you know, how do we best quantify function and dysfunction. You know, I have a big I have a big interest in EEG neurofeedback as well.

And so we will do quantitative EEG measurements on individuals. And that's been really fascinating to see. Can we see improvements in electrical brain efficiency.

So I'm sure our listeners don't know what a neuro quant is or the EEG. That is absolutely not part of a standard neurology care for Ms. patients. So I hope our listeners understand what those are.

So the MRI is taking a picture of the inside of the brain. And the brain is just like with real estate. It's the important things are location, location, location, because different parts of the brain do different things.

And we can take an AI, a computer program and analyze the images on the MRI, and it can distinguish how large each part of the brain is. We call that volumetric analysis of the MRI.

And there are several different brands of this like neuro quant or neuro reader. There are and more and more of these, the AI assisted ways of understanding has one parts of the brain shrunk more than others.

And you know, if we have shrinking in part of the brain, we typically think that there is long term damage. Or if we have swelling in one part of the brain, we may have an issue of an acute problem.

So we want to have the a great radiologist looking at these studies to begin with. And but then also make certain that we're having all the advantages of computerized analysis on our side as well.

Absolutely. It's super helpful to follow the volume of the brain. Because you'd rather not I don't want my brain to be shrinking and shrinking is part of the aging process.

People with M. S. have higher rates of brain volume shrinkage, and that's part of what we're studying is can a better diet, get people back to healthy rates of brain volume loss?

And so I'll know that the answer to that question in, 2027, when we're analyzing our data. So we'll get back together again and we can compare notes how things are going.

That is great. And I want to really emphasize, again, plasma exchange is a great I always think of it like a snow blower. And since you're in Iowa, you you're well familiar with what a snow blower does.

You get a snow storm and it clogs the snow, clogs everything, and you're so happy. And when I was at Mayo, I had, in Rochester, I had a snow blower. And it gave me great joy to go out after a snowstorm.

And we and, you know, and just all of a sudden, what was plugged is now open. And yay, the snow blower worked. But what if it keeps snowing, right. And so I think plasma exchange is an amazing snow blower.

And I think it can clean up and, you know, kind of get us unblocked. But diet. So diet supplementation, lifestyle change, exercise, meditation, all of those are slowing the snow storm.

And you got, you know, you really want to go to the end. That's the most important thing to for us to be focusing on in the treatment of this condition.

And thank you for leading the way on that. Incredibly important. Well, this is just so, so interesting. Now, for our listeners who are thinking like, you know, this sounds sort of interesting.

I'd like to check this out for myself. And I think it's particularly helpful if you have then, you know, being treated by your conventional neurology team and you're still declining.

Is that the right person who may benefit from, trying to come see you? David. So we know that I think plasma exchange is drastically underutilized. Okay.

I just think that there's a should have this in our treatment differential with all autoimmune disease and all of these where the habitat of the cells, you know, the fluid that's around the cells is, is a major contributor to the disease process.

And we should just have it. We should at least think about it. For severe autoimmune disease we have certainly many cases of Ms. neuro myelitis optica.

We have myasthenia gravis patients. We have chronic demyelinating poly neuropathy patients. So it is you you've said this very well as you've lectured on Ms..

You know, treat the patient. If this individual is severe and progressive, you need to step on it. Everything that is possible. You know, the steroids we have, the disease modifying medications.

We have, you know, changing the diet acutely and critically.

Longevity, Clinical Use, and How to Connect

All of those things should be on the table. And but plasma exchange is definitely most indicated for those individuals who are not succeeding, in the more, conventional and inexpensive therapies.

I would tell you, if there wasn't, cost was not an issue. And approval from insurance companies and all those things were not issues. I think plasma exchange would be used much more frequently and much more.

First line, because it addresses the underlying cause. Terry, I get to do a lot of longevity research. And I've worked with some really remarkable companies, and we have a huge data set on what Plasma Exchange does for longevity.

And what's so surprising is that when you do plasma exchanges repeatedly and address that cellular habitat, you change the behavior of the T cells. And so we we're always thinking about plasma change, removing the antibodies like I mentioned before.

And we kind of blame the antibodies. But we don't think about all the cellular signals that are swimming in that soup. All the cytokine, the you know, the inflammasome, all of the signals that one cell is yelling to another cell and almost like a mob behavior is kind of riling the mob to all the misbehave.

And if you can clean out all the signals for a moment, just let everybody be quiet for a minute. There's calming that happens in the cellular side of the immune system.

And anyway, that's what I think we're it's this has caused me to really rethink. And and actually it has so reinforced everything else that we do from a lifestyle management standpoint, because it's like I get to see these changes happen sometimes in the chair.

We have one of our patients with stiff man syndrome, and these are antique Gaba antibodies. And she literally starts to move better sitting in the chair she starts.

So it's very exciting being able to move and seeing people with myasthenia gravis, start to improve. Even sitting in the chair. One way or a patient with long Covid came in and came in to talk to him for his second exchange, and he said, my gosh, I had the best day of my life yesterday.

And some people can have an a very immediate response. That's not what most people should expect. It's, you know, it's just we should keep being curious about why do we get great results sometimes.

And then who are those people who could also get those results? And then also who are the people who won't get those results. So okay, so I'm sure a lot of our listeners are very curious and want to know how to find you and how to have a conversation with your team, but to decide, should they come try and see you.

So, David, tell us how people find you. Well, go to Maxwell Clinic Aecom. Maxwell Clinic Aecom is a I founded Maxwell Clinic over 21 years ago and Maxwell stands for you know, maximizing well-being.

And that's always been the goal here. Our phone number is 6150091. We have educational materials. We have new patient coordinators. See what we can answer your questions.

And I we just want to encourage everybody, you know, I wrote a book called Curiosity Heals the Human. And I. And increasingly I realize how important that is.

Stay curious. If you're stuck, it's just an opportunity for you to learn something new and get try something else. Never, ever, ever think that you're stuck.

Your body is so incredible, is so capable of healing. And, it's something we should always remember. Stay curious and stay helpful. And one more time, your website.

David Maxwell clinical com Maxwellclinic.com. Okay. Well thank you so much. This has been marvelous. Well thank you Terry.