Introduction to Migraine and Functional Neurology

Hey everybody, Dr. Rob here, Proven Health Alternatives. We've got Dr Adam Hardcourt. I'm excited because he is without question an elite practitioner in functional neurology.

Really going to delve into the idea of headaches. Happy I got some time to get him. Doc, how are you? What's going on? I am good, Doc. Thanks for having me on today.

So let's delve in to some migraine factoids. Migraine headaches affect over 1 billion people globally, with women being three times more likely than men.

In the US, it's 40 to 42 million adults suffer from migraines, impacting one in six households. Migrains are the third leading most common neurological global disorders.

And migraine are a headache, obviously, that are characterized by recurrent episodes of pain. It is typically accompanied by nausea, vomiting, photophobia and phono phobia.

So can you make sense of all this? I'll do my best. Well, and the important thing is I like to start off with this right away. That is specifically for your classic migraine or your common migraines, which have to do with actual head pain, where, as I really like to emphasize the fact that migraine is a neurological disorder, a genetic neurological disorders, and there's many forms of migraines that have no pain whatsoever.

And I think that's important to understand, especially when we're treating those conditions, because many times they're treated like other conditions than migrain and you don't get good outcomes.

So, I always like to what causes migraine and then we kind of branch out from there. So that's kind my take on this. I'll give you just a brief summary and I think we'll get into a lot of interesting things from here.

And so ultimately migraines is a genetically mediated disorder, which doesn't mean like your parents have to have it. It just means that your genes are different from people that don't have migrain.

What those genes do is they allow certain parts of the brain to basically fatigue or fail. And when they fatigue your failure, you get symptoms. So it's what we call hyper excitability.

If it is in the area of your brain that inhibits your head and face pain, and it fails, that's classic migraine. But if it's in the area that controls balance, for example, and that fails, well, now you get vestibular migraine.

You get dizziness.

Why Migraines Happen: Genetics and Brain Excitability

Or there's even a severe form that I've treated many times called hemiplegic migrain, where it affects the areas of facial control, of tingling and numbness, And it looks like the person's having a stroke.

It's really scary the first couple of times it happens. But it is migraines. And so you go, wait a minute, how can all these seemingly different things be the same type of pathology.

And that's really where things get dicey. That's what got me really interested in migraine and to treatment overall. So migraines are a genetically mediated disorder.

Who would have thought? Not me. If we would've surveyed the people listening, people would say trauma induced,

muscular tension, headache. Something wrong with the gut, communicating with brain maybe, but genetically modified.

So what can those 42 million Americans do if it's genetically-modified? What test should they take? Yeah, so it is a good question. The interesting thing is they keep looking for the migraine gene, and I got bad news, it doesn't exist.

If you look at the list of genes that are associated with migraines, they have one thing in common. they all deal with ion transport, meaning it could be ATP production, it can be magnesium, calcium, sodium, doesn't matter.

But all of those different genes, they help to keep your neuron, your cell in your brain, at a negative, what we call a resting membrane potential. Let's just say how negative the cell is inside.

And when that goes awry, when any one of these genes cause that neuron to be leaky, if you will. Now, that neurons comes closer and closer to what we call threshold, which is what it takes to fire off.

And so in layman's terms, what that means is the more genes you have that are causing this leakiness, the unstable those areas are, so the difficult it is to keep yourself from having migraine.

And so there's really only two ways to go about it. One is that we fix the genes, which we haven't really figured out yet, unfortunately. The other one is to try to make those areas of the brain more negative or more further away from threshold.

And the best way to do that, honestly, is through protein production, and the way best to that is activation. This is where it gets really interesting, because you mentioned a lot of really good points, like things like muscle tension, gut health, hormone issues, things that.

And the best way to think about migraine is that all of those things are what I call stressors, okay? So if you want to imagine your area of the brain that causes migraines as like a bucket, when that bucket fills up with gut issues hormonal issues musculoskeletal tension all that stuff, and the bucket overflows, that's when you get your migrain, Now, the gut health, muscle tension, all those things, they didn't cause your migraine, but they caused you to experience it.

And so what's really important to understand is two things. One, you want to do things that empty the bucket, right? So you address the guts, address hormones, musculoskeletal, and all this kind of stuff.

But the cool thing that we've been doing with neuromodulatory type of modalities is we can actually make the bucket bigger, which is to say you make those areas of the brain more stable through stimulation.

So the key to long-term improvement is emptying the pocket as much as you can, but then identifying where that bucket is so you could recommend treatments, therapies, whatever is appropriate to make that pocket bigger so your more resistant to having that migraine.

Great metaphor. Thank you. Empty the bucket. Don't have holes in the buckets. So you have downstream inflammation wide in a bucket so you never get it too high.

You don't get to that threshold of inappropriate activation or lack of activation. Great. Metaphor. Let's play some games from the East coast. Yep. Right, this is a New York game.

Give me on a scale from 1 to 10. We're going to talk about causes of migraine. Rate them on the scale of 1-10. 1 being not so much, 10 being watch out for it.

Family history of migrants. Very high, I'd say like a 6 or 7. Doesn't mean you have to have it, but very common. Imbalance in newest transmitters, serotonin and dopamine.

very controversial. So I'll say I don't have a good number for that. It's like 3 or 4. Serotonin being that

neurotransmitter 93% in the gut and serotonins or the lack of seratonin affecting the brain and dopamine Parkinson's and I know we don't want to go into that rabbit hole of Parkinson and headaches, but let's dig in.

Inflammation in a brain can also contribute to pain. Yeah, absolutely. So there's even a whole theory on central sensitization. I would say inflammation of the brain, pretty high, seven, eight.

Vasodilation is thought to be a key mechanism.

Common Triggers and Stressors That Fill the Bucket

Not a mechanism, it's a driver of pain. It can't cause the pain, but it will, what I call, turn up the volume. Anxiety, depression, all the mental health.

Very commonly comorbid. I would say that puts it up like six, seven. So some triggers, we'll call them triggers of migraines. Stress? Depends what type of stress, but I call all of them stressors, so 10, right?

Because they fill up the bucket. Right. Hormone fluctuations. Very high, I'd say eight, nine, especially at the beginning of your cycle, you get a huge, huge dip in estrogen.

It really flares it up. Sleep deprivation. Up there as well. I would say seven, eight. Foods like chocolate, cheeses and caffeine. And where do you stand on caffeine?

We could do a whole episode on Caffeine, but I'm going to summarize all the literature real quick for you. Decreasing caffeine does not help whatsoever.

Eliminating caffeine, no matter where you're at, huge benefit. So I don't care if you are drinking one cup or ten cups, dont decrease it, you got to get rid of it.

And the other thing that's important is youre going to have a bell curve effect, meaning the first couple days will be not fun, alright? So do it on a day you can rest, but after you get over the hump, your going feel a lot better.

I would love to ask you a question about caffeine and neurodegenerative disease. Let's go off the road for a sec. So I have a couple different theories on it.

My main theory is that the antioxidants that you get in coffee are probably more of the drivers of decreased neurodegeneration than anything else. And because our general diets are so low in antioxidants, it probably shifts the scale a little bit.

When it comes to the actual caffeine in it, there are different receptors that we think may play a part. That part I'm not an expert in. Again, my theory is antioxidants.

But I can tell you when it come to migraine side of it there is much better ways to go about dealing with your migraine than trying to drink a little less coffee or do a tea or this or that.

I'm telling you when it comes to migraines, 85-90% of my patients do respond extremely negatively to it and they've all tried to decrease. It doesn't work.

You have to eliminate. 100% have You know, it's so funny, when I went to school 30 years ago, and they were using felt pens and things like that, the teacher who talked about a migraine talked cafferol.

Now, talk about 180 degree turn from then. I will say it is a double-edged sword, because in the acute phase, It can get rid of migraines. That's why it has an excedrin and other things.

So, I tell people to use it like you would Advil, for example. You don't take Advill every day, but if you have back pain, maybe you do for a day or so.

Same thing with caffeine. If you had a Migraine, its okay to take it in a short term. The problem is after about three days of consistent use, they've actually done studies where it increases hyper-excitability in the brain, which is the whole problem to begin with.

So after those first couple days, you're already doing yourself a lot of harm. One to ten, bright lights, loud noises. Ten if you have a small bucket, but if use them properly, it can help to increase the size of your bucket.

Physical exertion. Really good one. Same principle, small bucket. It will lead to a migraine. If you do it in smaller doses, it can help to increase the size of the bucket People talk about the change in the weather, rain, cold, hot.

How does that affect migraines? Huge. Anytime I see a cold pressure system come in, I know I'm going to get a bunch of calls from people flaring up. So I always tell people I haven't figured out how to change the weather yet.

Can't do that. But if we make the bucket bigger now, when that weather pressure systems comes in the buckets empty enough, it doesn't fill it up all the way and they don't have the migraines.

So my wife is right, we need to move to a warm climate to have an absolubrious effect. Easy, piece of cake. Yeah. Is there a link between concussion and migraine because there's such a vast growth of concussions?

Yeah, so, and again, you can stop me if I get too off the rails here, because I've done four hour seminars just on this, but I'll simplify it a little bit.

There's three main scenarios with concussion and migraine. The most common is you have a history of migraines, You get a concussions, they get worse. Makes sense, right?

It's a stressor, it causes damage, inflammation, things like that. That's the more common one. the other one that is a big, big problem is people that have no history with migrain, They have concusions and now they got diagnosed with Migraine, Here's the reason this is a huge problem.

Migraine and concussion, completely different headache conditions. Completely different. However, if you look at the diagnostic criteria, gold standard, for diagnosing migraine.

Post-concussion headache fits perfectly into it. So you can't even fault the doctors, neurologists that I see all the time that say, hey, I diagnosed this as migraines and the parents come in all upset because we figure out it's concussion.

And I go, well, technically they're right, right? By our current standards, they are correct. The problem is, When you do this and you see so many people, you start to find patterns and figure out what is actually migraine and what isn't.

And so the common story that drives me insane is I'll find people that had a concussion when they're 30 or 40, I see them 10 years later, they've tried every migraines medication under the sun, zero of them have been effective whatsoever, and within five minutes you can talk to them and say, yeah, that's not migrain, what are you talking about?

And they go, yeah, that makes way more sense because none of this stuff worked at all. So that's the one that drives me insane. But I see it literally every week.

The third scenario is the least common. This is usually with kids that have the genetic predisposition for migraine. but haven't expressed it yet. So let's say they're 14, 15, 16, they get a hit to the head, They have the genetic predisposition for migraine and the concussion was the thing that pushed them over the edge.

They actually started to experience them. That does happen. It is possible to get concussions and start having migraines.

it's just wildly uncommon, especially if you're after about 25 or so. Let's do some true false. I'm prepared for you. A concussion can be the trigger for a migraine, particularly in individuals susceptible to developing trauma-triggered migraines and future migains.

Yeah, true, especially in kids. So consequently, a concussion and a migraine can occur from the same trauma. Again, specifically for kids, but I will say, if you look in the literature, you're going to see that it happens all the time.

I'm telling you, it almost never happens, specially if your 25, 30 or older. It's misdiagnosed as a Migraine when it's post-traumatic headache. Post-concussion syndrome can include a migraine headache, yes or no?

Yes. Okay. Treatment for post- concussion migraines headaches are similar to those for regular migains in that we're going to rest, lifestyle, we will get to low-level laser, specific dietary modifications, supplements, etc.

Yeah, I would say from the neuro rehab standpoint, it's very similar. From the nutrition hormonal standpoint it is a lot different. Agreed, agreed, without question.

They're treated as two, unfortunately, different items and we should now start treating things together if they're both being affected by the incident or the trauma, etc.

100%. A mild TBI is a risk for chronic migraine, yay or nay? Yay. Data reveals that more than 95% of all people who suffer concussion can expect a headache.

Yep, I'd say that's pretty accurate. I would also say I add to that double vision. It's rare to see somebody that doesn't have diplopia after a head trauma.

So would it be fair to say one of the reasons that women are more susceptible to migraines is they're much more susceptible to concussions for obvious reasons?

Yeah, i would say thats fair. Now we talked about the problem. What type of therapy treatments are you often seeing effective? for the attenuation of a migraine?

Yeah, it's a great question. So I'll tell you, I don't have a formulation for it. I have, uh, a framework, right? And so, um, understanding what migraines is, always zoom out and say, okay, based on the bucket theory and all that kind of stuff, we need to do two things.

One, We need do a full neuro-evaluation. That's what we do on every patient, to figure out what part of the brain or brainstem and then what side of brain and brain stem is where the Bucket is essentially.

It's not always as clear on ever patient but it usually is. pretty easy to figure out. And then once you figure that out, that determines what types of therapies will be effective.

So for example, if I find the bucket for, example is more in the midbrain, there's going to be exercises like convergence activity, vertical eye movements, maybe proximal muscle activity that's gonna be really effective for that patient.

Whereas if it's more lower brainstem, I might be doing things like peripheral nerve stimulation or vestibular rehab or those types things from an activation standpoint.

And then we have to look at the things that fill up the bucket, which are stressors. Most people are familiar with, I need to get good sleep, drink plenty of water, the basics.

I look into things which aren't so obvious. One being diet. We've been developing our dietary regimen for years now. And there's a lot of strange things you would never expect that cause migraines.

For example, I can't tell you how many people the linchpin that finally figured out was pineapples. You're like, what the heck? Pineappls? Are you kidding me?

And that's what it was. So we find all this kind of stuff dietary wise. And then the next component is hormonal. And I think it's important to understand that there is no consistent hormone problem for migraine patients.

The consistency is that, there IS a hormone problems, whether it stress hormones, sex hormones whatever, that is filling up the bucket, right? Whether it is conversion, aromatization, it doesn't matter.

Something's going on there, so we do a pretty comprehensive hormone test to figure out what's gone on. Then we have the neurological and musculoskeletal side.

So your classic chiropractic acupuncture, physical therapy, massage, all of those can be really effective. But again, you want to apply them in a way that affects the part of the brain you're trying to treat.

And so the easiest way to understand this is If I twisted my left ankle and I did every perfect exercise to get it better, but I do it on the right ankle, it's not bad, right?

But you're not fixing the left angle. And so you see this a lot in migraine. Let's say I get a patient from another chiropractor, they're doing a great job adjusting and doing things like that.

But if they are adjusting on a side that's appropriate for that patient, that is not hurting them, and it is also not activating the areas in a way that it appropriate.

And then we see this with laser too. Laser, we know, can be effective for so many different things, but when it comes to migraine, We try to target it at the areas that are actually involved with migraines.

So we've been toying around with this for a while, But we're seeing some really, really good results with Laser. And the nice thing is, one of the only studies they've done on this, they compared it to Botox, and they found that it actually worked better than Botax in the long term.

I don't know about you, I would probably prefer to have a couple minutes of laser to tons and tons of needles every three months. So that's something that is not a hard sell for most people is to not have to do Botox anymore.

I concur. I mean, they want to do Botox on my neck and I'm much happy with laser. Couple of ads, you know, really want a peek back on what you said about the diet.

So low inflammatory diet, uh, You're looking at removing food sensitivities, food allergies, your typical greasiest things like ultra processed food, fried foods, Your nutrients, white willow bark, fever, few malic acid, calcium, magnesium, multivitamin, multi-mineral, pre and probiotics and the peptide that I love is BPC 157. To summarize everything that you were saying about laser, and I loved laser and now we're gonna delve into laser as the device that we would both go to for headaches, low-level laser improves brain blood flow, reduces inflammation, promotes healing, reduce pain and severity, modulates those neurotransmitters, their serotonin, there's some definite data on that.

Treatment Framework: Neuro Exam, Diet, Hormones, and Rehab

addresses underlying causes, which is something that maybe you want to go into like a TMJ whiplash and a sinus problem with a migraine. Yeah. So when it comes to laser, there's what's frustrating.

And this is why I'm excited about kind of the future of where this going is there is very little research specifically on laser applications in migraine.

Now, there's tons of research, like you said, on lasers for other stressors or other things that can increase your probability of migraines like TMJ, neck pain, back pain inflammation, all that kind of stuff.

What we're seeing so far is we are using laser primarily on the areas, and this is what the study did, on areas where they were using Botox. So, proserus, corrugators, frontalis, temporalis.

Occipital, suboccipitals, trapezius. And what's pretty cool is you only need a couple seconds, like we use a few minutes just as people get better, but you don't need that much time to stimulate those areas.

Here's what is exciting. If you look at the research on what they did of Botax versus laser, Both had a pretty similar reduction in pain. But once you stop treatment, you saw that Botox maintained, but laser continued to decrease the probability of migraine.

Let's zoom out and look at the pathophysiology. Well, we know that it's hyper excitable. We need to produce protein production. What happens with Botax?

Well Botaux decreases the activation into those neurons. So temporarily, it is keeping things from filling up the bucket, which is why you can see an improvement, Which seems like a good thing.

The problem is, The way that you make the bucket bigger is through stimulation. And so now, if you have these areas and proprioceptors and all these things that are not stimulating the trigeminal nucleus, for example, that bucket starts to get smaller.

If you look at the literature on Botox, what happens? Well, it works great for three months. Well, after a couple of times now every two and a half months, every, two months every month.

And the max benefit is usually three, four years where you just can't inhibit that facial movement enough to keep that bucket from overflowing. So it doesn't work at all anymore.

What do you do? Well laser is the opposite, right? Not only is it anti-inflammatory, you're getting stimulation of those areas that are involved, but at a level that doesn' overflow the bucket, okay?

So like you said with exercise. A lot of people stop exercising because they exercise and they get a migraine, right? It's not because the exercise caused the migraines, it's because their bucket was too small.

As they gets stronger, as that area and that bucket gets bigger, now exercise actually helps make that pocket bigger and make them more resistant to migrain.

So it is not about whether a therapy or something is good or bad, its when is it appropriate and what is the appropriate dosage for it. And so we even do this with laser where we start with a low dose and then we gradually increase as they, they got more and more stable.

And that's kind of the main principle of how we go about that. Love it. You know what I call my laser or lasers? I called my Goldilocks tool. Not too hot, not too cold, really just right.

And actually, the lasers that you and I both use are non-thermal low-level laser based on electromagnetic transfer of energy, so there's no heating. I wouldn't want to heat a brain.

in reference to migraines. Harvard University Medical School found that exposing migraine suffers to a 520 nanometer light significantly reduced photophobia and can reduce headache severity.

It was in Brain, May 17th, 2016. So that is exciting. Right now, we have a article. The way that they looked at that was They're looking at the full spectrum.

They said, what frequencies, if somebody is more prone to migraine, will reduce their probability of having one? So this is where you'll see the green lamps that are out now.

And they're great, because what they find is the Green Light is less irritating to the visual system of the migraines

patients. So let's say they have a small bucket and it's pretty full.

if you're in full, you know, spectrum light all the time, the probability that you are going to have a migraine go up. If you take that spectrum down to green, we're good shape, right?

They do better. So the theory, and this is where I'd like to go next with laser, is now looking at, okay, from an activation treatment standpoint, does that mean that green laser is going to be better from a laser treatment's standpoint?

Or is it red or is violet? Is it a combination? We don't know yet, to to honest. And so the studies we've looked at so far have looked laser and said, OK, if we just get the light into there at a low dosage, we see an improvement or a decrease in the probability of migraines.

So we're trying to put all that stuff together to make a protocol that's a lot more predictable for patients, but you're right on with the green day. I have people that use green glasses.

People that have green lights in their room, all sorts of different stuff to deal with, the intensity of migraine. When you talk about dosage, you are talking about low power, milliwatts, not watts.

And you're looking for the combination, possibly, or the individuality of the light. The ones that we have to choose from are 635, which are red. It's a wavelength.

I don't like to use the color like a light because then they think it's infrared and red light therapy and all that kind of nonsense. That heats my sauna.

And then, as I mentioned, a 520 green and a 405 ultraviolet. My guess, and this is a guess. is that the lower you go down on the visible light scale, the more photonic energy.

I'm thinking that maybe that's gonna be the sweet spot, but I waiting for you to do the program and study. That's my guess as well. And so we've been debating that quite a bit.

So you're right on as far as kind of our thought process. But again, for us, it's always test and measure, right? So we have theories, we papers, We have things that are directing us to where we think we can be more effective.

But the reality is we're just trying to collect more data. I've been treating people with laser for migraine for about 10 years now. So we've kind of been tweaking the frequencies.

We find that makes a big difference actually. Lower frequencies tend to respond a lot better to migraines than higher frequencies, so we try to keep it lower.

That's just our experience so far. And I've also seen that with things like trigeminal neuralges, higher frequencies tend to really flare them up, lower frequencies, tend do really well.

Again, this is just things that we found over time, but we're trying to dial this in so we can make it a little bit more accessible. Because as you said in the beginning, 42 million people in The US and my population that I primarily treat is chronic migraine, which means 15 or more a month.

So 20, 30, sometimes people, like I just had a lady, she was having last six years, no days without migraine, right? None. And just in that population, you have about 5 million people in the US that are suffering almost every day or every other day.

So when you approach it, piecemeal, right, where you just try a diet or, you know, acupuncture, chiropractic. What happens is the bucket's so small that any of those therapies can be really, really good for you.

Laser Therapy, Light Sensitivity, and Botox Comparison

But because the buckets so smart, there's other things filling it up. It looks like it's not helpful. So you go, oh, I, that chio-pratic didn't work, so I got to try something else, or that diet didn' work.

I gotta try somethin' else. And they try every single thing and none of it works. because they're missing the understanding of the pathophysiology. And this is why I really enjoy teaching and I wrote the book and try to educate as much as I can because the more practitioners understand that, even if you don't do a thing that you think the patient might do, say hormones or nutrition, you get them to the person that does it so you can treat them appropriately as opposed to just saying, well, my therapy didn't work, best of luck to you.

You know, and that's what I find over and over again with these chronic migraine sufferers, unfortunately. Yeah, I mean, you saw me kind of throw my arms up and use the word it sucks.

It wasn't your answer. Was the numbers. That's just terrific. I'm fortunate that I have no issues with headaches to date. Let's hope that stays. But I noticed when you were talking about the laser, you mentioned frequencies and lower frequencies, not a wavelength per se.

A frequency is the amount of time for clarity that the lasero light hits the skin. I agree with you on the lower frequency. And I found that lower frequent is better for acute.

If you want to take the baton and run with it from there on that. so we can get a little feedback because if somebody's coming in every other day or every day for a headache, that's an acute episodic condition.

Correct. Yeah, and that that actually a great point is there's a difference between the acute episode of migraine, which is what most people think of, And then the prevention of my migraines, right?

So if you're having 25 a month, okay, Well, you're both in wanting to prevent the migraine, but also wanting get rid of the headache that you are having almost every single day.

And that can be really challenging, because a lot of medications, like tryptans for example, it's great that we have them because they can knock out a migrain when you have one, But as anyone that's taken them knows, they are exhausting, right?

They knock people out, there are a lots on the system, and so the probability that your going to end up having a rebound headache or another migraines goes way up.

And so by just getting people off of the tryptans and using alternatives, which we've developed, you're able to decrease that stress on the brain, right?

And then so when it comes to laser, what's really cool about laser is it's such a low intensity or low impact on that the nervous system from a excitability standpoint.

that even in the middle of a migraine attack, I can still use laser to help knock it down a little bit. Now, we have to do it a bit differently because sometimes just the light over the eyes can be a lot irritating, so we modify it bit, but getting that light into the system as they're in a middle migraines a lots of times knocks it, and then we use other modalities like insufflation and high-volt galvanic vagal stem and different things like that, But laser is one of the main things that we used as well.

So let's do that one to 10 thing again. Let's keep you jumping. Okay. On a scale from one 10, 10 being yeah. Home run grand slam, 500 feet out of the park.

Where would you rate low level laser for migraine treatment? I put it up at an eight or nine just because I can use it for both. I could use for the, the abortion of migraines and also the prevention diet.

Huge. Like a six only because it's not as big in certain people, but in others it is everything. How about environment? I know that's an encompassing word.

When you say environment, what specifically? Where you live, your home. So that reads the question of mold and microtoxins. Yeah, so when we get into mold, that definitely is playing a bigger part we're finding.

I don't know why, but we find it in a lot of people these days. That's part of it. And then where you lived, honestly, the weather changes. Some people have just moved and their migraines get better.

not because they're fixing their migraine, because their filling the bucket up less with the weather changes. So again, it all goes back to that basic understanding.

I'm going to dig in deep on this one. It's almost time for us to geek out a little bit. How does a chronic migrain reflect impaired energy metabolism and neuroinflammation?

How is it reflected? Yes. Interesting. There's a couple of different theories on that. This is a great paper that goes over all the different ideas of migraines.

And one of them is central sensitization, one is peripheral sensitisation, ones neurogenic inflammation, and then we have what I was describing to you, which is what we call our brain state theory now, Which is that all-encompassing kind of brain disorder, understanding, bucket theory, things like that.

However, The metabolism of ATP, for example, if that's impaired, it impairs the ATP pump. So one of the genes that I talked about that is affected is one that affects the ATP.

Even though the atp pump is not the primary driver of negativity in the neuron, that the protein production, its pretty high up there. And so if you have impaired ATP production, you can't keep that ATP pump running the way that's supposed to.

And it brings you closer and closer to the threshold, which makes you more likely to become hyper excitable. So if have you impaired ATP production that can drive migraine.

Now, You can have perfect ATP Production and still have migraines because you could have an issue with a magnesium channel or a calcium channel, or potassium channel.

However, if do have ATP issues or mitochondrial dysfunction, And even if you don't have a gene for it, it's going to drive your migraine higher and higher.

So that's why when we test for hormones, we also test some organic acids to make sure that a lot of your precursors and things like that are intact. Love organic acid testing.

It's a big ATP production, so obviously there are certain nutrients like NAD, coenzyme Q10, alpha-lipoic acid, L-carnitine you're going use. And if that is the case, I'm going to submit to you that all three laser lights are the choice because the violet light stimulates complex one and two in the inner layer of the mitochondria, stimulating the electron transport chain, the green light, green wavelength 520 stimulants complex three, and the red finishes it off to stimulate complex four, hence making more optimization of ATP.

That's my theory as well. The reason that I, again, in a lot of talks with a lotta people, but as of right now, maybe I'm not aware of it, I don't think we have a laser that has all three wavelengths at this point.

I know you can put them together, yeah, But I think that we don' have one by itself.

Energy Metabolism, Vascular Factors, and Vagus Nerve Stimulation

And so my thought was, okay, well, let's take something that exists and just do that one isolated. But from a clinical standpoint, my though is all 3 would make the most sense.

Let me ask you, the vascular component of migraines. We really haven't talked about that. Yeah, it's funny. I talk

about this tonight because I teach a whole migraine program and we'd spend 25 hours just on pathophysiology.

So we dive into all this stuff. But one of them is there's been like a 150 year feud about neurological versus vascular when it comes to migraines. And basically what we understand now is the vascular component is a consequence of migraine, not a cause of my migraines.

That's the best way to understand it. And so, for example, you'll see a bunch of studies on if you have like a patent foramen ovale, which is like little hole in your heart.

And if you have that, it increases your migraine risk, and if fix it, you can decrease migraines. That's true, because stressors on the system at all, anything that we call an allostatic load, increases the probability of migrain, period.

So if have atherosclerosis, if your have thrombosis. Anything that's going to cause impairment of blood flow is going increase your probability migrane, not because it's causing it but because its increasing the stress or allosteric load on your system.

However, You also hear about like the expansion of the cerebral blood vessels contributing to the migraine. And for a long time, you hear people say that's the cause of it.

It's backwards. The cause is the genetic component that leads to migraines. However, during the migrate, and you can get an expansion the blood vessel, because you have these receptors that come from the vessels back to that trigeminal ganglion, back the TCC, it turns up the volume on your migraine.

So simple at home tip for people watching today. A lot of people, when they get migraines, they'll put ice on the back of their neck or on their head or something like that.

That's all fine. But 70% of the blood flow to your head goes through your carotid arteries. And so what I found works really well is you put right over the carots for about 20 minutes or until it's numb.

When you have a migrain, And it helps to shrink the blood vessels in the head, not because they're causing it, but it's just turning down the volume on the migraine.

And a lot of times, that gets people to a point where they can get through their day, and not have to take medications. It's a simple thing anybody can do.

Outstanding. I'd be amiss if I didn't ask you about my favorite nerve in my body. For my money, it is the only anti-inflammatory nerve, the vagus nerve.

Vagal nerve? Yep. Going down through the transverse colon and all that. What effect does an appropriate tone of the vagus nerve have on a migraine? Yeah, it's big.

And so you'll see there's a couple of devices now, like GammaCore and stuff is out, and there is a bunch of studies on vagal nerve stimulation. I'll give you a really interesting little tidbit.

Now that they've done a whole bunch studies of cervical vaginal nerve simulation versus auricular or on the ear, they basically found that for getting rid of migraines, stimulating the cervical portion tends to work better.

However, for inhibiting or preventing migraine, auricular stimulation seems to worked better, we don't know why, and we have no idea why. It's just the correlation that we found.

So what I do is we use a stimulator where we'll put one of the leads on the ear and the other on a cervical proportion and will just switch which is which depending on if they're in the middle of a migraine or if we're trying to prevent the migrain.

so you can actually stimulate either one. I think we as chiropractors, and I'm gonna pound our chest for once, I

never do it, really are way ahead of a lot of other practitioners in the idea of vagus nerve stimulation.

I mean, when you graduated, 26 years ago, all I knew about the vagous nerve was creating a nerve number 10 and it was capped in a parasympathetic nervous system, that was it.

Now we're talking about utilization, migraines, concussion, gut. autism and the like. However, back to you. I wrote down a question for you, Dr. Hardcourt's vision for migraine care in the next decade, how laser and neuro functional medicine gave you a new term, redefine chronic headache management.

Yeah, and that's kind of what I'm working on from a global standpoint is my main complaint, if you will, I'll get on my soap box here, is that almost every practitioner that treats migraine treats it for what they do and not for migraines is.

And so my hope is in the next 10 years or so, all of us, whether you're in primary care medicine, neurology, chiropractic, acupuncture, whatever it is, physical therapy, We can all zoom out and say, okay, here's what's going on with Migram, right?

Here are the tools we have at our disposal, and then here is a framework in which to assess each individual patient, because that's they need. Each individual needs an individual assessment.

And we can run basically a primary care for Migran patients. I gave a whole speech. Again, You know, my background's chiropractic, so I have a special place for that.

But I gave a whole talk to about 400 different doctors where I said, look, chiripractors really should be the primary care doctors on every migraine case that exists.

Not because there's not other good tools out there, but because of what the pathology of migraines is, it is such that it's a functional disorder. There's no tumor that's causing it.

It's from a stroke. it not from an infection. Because it it those things, we have experts that are awesome at taking care of of brain surgery or of infections, and they do an incredible job.

Migraine is not that. It's a different condition. And because we're in a place where we also have all the diagnostic and imaging capabilities, it makes sense that that's where you start because my frustration is I'll take people that are going on 20 years of chronic migraine, trying everything under the sun, and within a few weeks, not only do we have them to where they're not really having many migraines, they are also off of all of those medications that they've been on for 20-years.

Now, are there some cases that is so severe they need medication as well?

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Yeah, I've seen those cases, absolutely. But why is it that 95% of the patients that I see, half of our job is getting them off of all the medications that they're on?

So it would make sense to start with the things that we're doing. And if that doesn't get it done, then you move on to the more invasive type things, not the other way around.

That's my big, big push. Sometimes when you work with other doctors and you're dealing with certain conditions, they don't want to pull off this medication or that medication.

They're worried about this or In all of my years and thousands of migraine patients I've had, every time they go back to their neurologist, their doctor, whoever, and they're like, hey, I'm doing something different.

I wanna get off these meds. Every doctor's like great, awesome. We don't want you on that stuff anyway. So we

were just trying to do what we could to get you through, right?

So nobody wants them on this stuff. And if we could set up a primary care situation where they're getting addressed appropriately, an individual treatment plan, and taking care of these simple things that you can do, it keeps them from going from once a month to once week to twice a week, to four times a day to now they are in the snowball where it's almost impossible to get out.

I want to keep them getting to that point and let them have a healthy and flourishing life. Here, here, I concur. Great closing statement, but it's not your clothes.

Okay. Here we go. My buddy, we do it for everybody. He listens, he's over in Geneva, good friend of mine, and he says, Rob, give me that one thing, that thing I need to do differently for the subject matter.

So share with my good friends one things you can do to avoid a chronic or an acute episode of a migraine. Oh, those are two different questions. I'll say I have an Acute Protocol, so I will give you that first.

First, acute protocol, ice on the front of the neck, and I'd help develop a product called MGR. It's just high-dose ginger and MCT oil through a company called Biogenic Nutrition.

Great company. And you take the Mgr under the tongue, right? Ice on front the of neck. Then either laser therapy right on V1, like over the eyebrows. Or you do insufflation, which that's a whole other topic we'll get into.

You can look that up. Or, you can do some vagal nerve stimulation on the cervical portion of the vagus nerve. And you leave it alone there. If that doesn't get it done, then you take a little caffeine, whatever, get through it.

But I find that those first couple things work really well. So that is the day you have a migraine. As far as prevention goes, obviously I'm a bit biased.

Laser is one of the number ones. I use this with basically every one my patients for prevention. Peripheral nerve stimulation, okay, I used that. And then again, through a company called Biogenic Nutrition, developed a product called MQ7 that takes almost everything in literature that's shown to help with migraine, and it's all in one product, right?

Not because it fixes all migraines, but if supplements are gonna help, that pretty much does it. So I put everybody on that stuff with the peripheral nerve stem and the laser.

Now there's a million other things, but that's kind of a foundation if you're trying to get yourself out of that spiral. Outstanding, I love it, he's clapping, and I can hear him.

All the way over there, huh? All over the over, on tape. Look, it's been great. I know you are really busy. We have to do round two because we left a lot of meat on the table to dice up.

All right, my man. My pleasure, Dr. Adam Hardcarb, and Dr Rob Silverman, Proven Health Alternatives. We'll see you soon.