The Overlooked Hormones Shaping How You Think and Feel Transcript

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Podcast Introduction and Guest Background

The thyroid, unfortunately, is the victim of a lot of our modern lifestyle and our choices. For sure. There's so much that our diet, our lifestyle, our stress, they really impact the thyroid functioning.

So a lot of times if someone comes in and let's say their TSH is not high, but it's maybe not optimal, let's say it's in the threes, close to four, and maybe it's a free T4, maybe on the lower end of normal.

A lot of times I will just say, listen, let's give ourselves a month or two of really working on diet, exercise, sleep, stress reduction. Let's repeat this and see where you are.

I find that a lot of times when our patients can optimize those things, their thyroid levels come back in to a more optimal Welcome to the TBD Fit podcast on Dr.

Talks. I'm your host, Daniel Keeley, and I will be guiding you through this wellness journey in terms of optimizing health and longevity, where we unpack the science, the do's, the don'ts.

and everything in between. Come join us. Look forward to seeing you inside. Welcome to the TBD Fit podcast, where we explore cutting edge science and real world strategies to help you optimize health, longevity and vitality.

Today's guest is Dr. Rayena Marino, and we're going to discuss all things hormones and brain. And today's episode dives deep into a subject that touches every single one of us, which is obviously the connection between our hormones and our brain health.

From memory to aging gracefully, this is often a very, very powerful link that is typically overlooked. So I'm very thrilled to be joined by Dr. Marino.

She's a board certified physician specializing in integrative and holistic medicine with over 15 years of clinical experience. She's passionate about helping people achieve their vibrant health by combining conventional medicine with integrative approaches.

So our focus today again is the hormone brain connection, unlocking vitality, healthy aging, and mental clarity. Dr. Raina, welcome to the show. Thank you so much.

It's great to be here. I love starting by understanding someone's story. So how did you get into your practice? What was the catalyst or the impetus for you to start?

Yeah, good question. I actually had a career change within the medical field. I originally started out in diagnostic radiology, but got into integrated medicine just because of my experience with my father who unfortunately had a terminal cancer.

And from that experience, just really wanted to understand and learn more about what we could do in addition to traditional Western medicine, utilizing things like nutrition, IV therapies, exercise to help get the best outcomes for our patients.

Hormones and Brain Health

So that's kind of what led me into the integrated medicine field. Wonderful. And sorry to hear that about your father. Was that outcome a positive one over time or?

No, unfortunately he had a bad cancer, one of the worst, pancreatic cancer. So still working on that one. It's a little

better now, but still have a lot of work to do.

Okay, so looking at this connection of our hormones and obviously our brain and production neurotransmitters, which how I equate with my patient is hormones in the brain.

How do you kind of define it? What exactly is this hormone brain connection for you? Well, it's amazing, but we have receptors in our brains for all of our major hormones.

And we really need the proper balance of the hormones in our system in order to have our brain cells function at their best and also the connections between our brain cells function at their best.

And when we have that proper balance, we can maintain the health of the brain. We can maintain cognition, memory, not only old memories, but being able to forge new memories and maintain those as well.

And to me, I think that's one of the most if not the most important aspects of healthy aging is to be able to maintain our cognition, our mental capacity, our decision-making ability.

If we don't have that, we're really kind of lost. And what strategies are you speaking to your patients with suggesting protective benefits? Exactly. So when we have the proper hormonal balance, those hormones act on the brain to, again, not only keep the brain cells healthy, but to maintain the connections between them, which will help maintain cognition into our old age.

So we want to make sure that we're looking at the main hormones, which include Hormones like estrogen, testosterone, progesterone, also thyroid hormone, cortisol is very important as well.

We want to make sure that we're looking at those, checking their levels, and looking at that in the context of how the patient is doing. How are they doing cognitively right at that time?

Are they experiencing brain fog? Are they having trouble with short-term memory, executive function, things like that? Looking at their symptoms, their issues in the light of what their hormone balance looks like can give us a really good idea about where to intervene.

So the hormones that you mentioned obviously are critical in supporting brain health often overlooked and that's why hormone replacement is huge debate within any kind of sphere of medicine.

What is your stance? How are you discussing this with patients? Exactly, so you're absolutely right. There's been such controversy over hormone replacement and a lot of the main controversy started with the Women's Health Initiative study back in the early 2000s.

They were hoping to show that conventional hormone replacement helped women, it helped reduce heart disease risk especially, but what they found was they had to stop the study early because they were finding that the women in that study were having higher rates of breast cancer, also higher rates of blood clotting too.

So, pretty much overnight, women were kind of pulled off their hormone replacement and it kind of threw everybody in a bit of a tizzy of what to do about conventional hormone replacement.

But the important thing to know about that study is that the conventional hormone replacement those women in the study were on Number one, they were not on human estrogen.

They were on a type of horse estrogen pill, and they were not on progesterone.

Hormone Replacement Therapy Debate

They were on something called progestin, which sounds like progesterone, but it's actually a synthetic form of it and a different molecular structure.

So in looking at the data, really what the culprit was in terms of increased breast cancer rates was the progestin, that synthetic type of progesterone.

And the culprit in terms of the blood clotting was the horse estrogen taken by mouth. So When I work with my patients, I would say most practitioners in the integrated medicine field now do not use those old types of conventional hormone replacement.

They use bioidentical hormones, meaning they are the same molecular structure that we make naturally. And that makes all the difference because when we look at natural progesterone, it does not have the same kind of risks for breast cancer that the progestin does.

And when we look at estradiol, not the horse estrogen, that does not have the same issues in terms of blood clotting, especially if it's administered through the skin.

When it is taken orally, it can cause some issues with increased blood clotting, but we don't use it that way. We just use it transdermally. So it can be used safely, and there can be just tremendous benefits, not only for brain health, but for bone health and relief for women for hot flashes, night sweats, all those menopausal symptoms.

Yeah. And also bone health is a, is a very big concern, especially in the post-menopausal. And, um, you mentioned kind of brain health, there's obviously an impact on muscle and muscle is we understanding now one of the largest organs of, of longevity, if you will, there's protection throughout the body, but, um, looking at brain, we can see that, uh, when you're administering hormones, cognition improves, memory improves, executive function improves.

There's such a large impact. in helping maintain a specific level of our hippocampus and other areas of brain which impact how we live. Now looking at the brain in general, are there other hormones or anything else that you're introducing within your patients to increase kind of this neurotrophic effect?

Yeah, I like how you put that neurotrophic effect that really is what these hormones do when they're in the proper balance, especially estradiol, progesterone, testosterone is very important as well.

Thyroid hormone is also a key player. So if someone has low thyroid functioning, even if it's subclinical hypothyroidism, replenishing that thyroid hormone can also have that neurotrophic effect as well.

Interestingly, cortisol kind of is a little bit of a double-edged sword. You know, we need a certain amount of cortisol that helps our brain in terms of energy production, in terms of cognition.

But if we're under chronic stress, extreme stress for extended periods, that cortisol actually has a detrimental effect on the brain, particularly on the areas like the hippocampus, and it can actually destroy those brain cells and have a certainly a negative impact on cognition.

So not only do we look at, of course, in the proper instances and taking everyone as an individual, not only do we look at hormone replacement, but we also look at things like stress reduction and how can we bring that about for our patients?

How can we give them the tools to help manage stress that are not in this chronic flight or flight arena all the time and having excess cortisol that can be damaging to their brains?

Stress is unfortunately the biggest elephant in the room. And I think in our modern society, everything is predicated upon pressing go until we run out of gas and then we press go some more.

Burnout is certainly real. Are there any strategies that you're utilizing within your patients to improve HRV or vagal nerve tone to kind of buffer against this stuck fight or flight sympathetic driven state that we're unfortunately all too exposed to?

Yes, well, I really like to start just really with basics. So I would say, number one, you know, regular exercise, even

if a patient is not used to exercising, even just getting out and walking, especially if they can walk in nature.

not only just being outside is a great stress reducer, but the act of exercising reduces stress, but it also does something else. It helps produce a substance in the brain called BDNF, brain-derived neurotrophic factor.

Exercise, Stress, and Sleep for Brain Support

And the more of that we have, the more that helps to strengthen the nerve cells and also the connections between them. So, number one, I really like to stress and start off with exercise.

But also, I think one of the big things that so many of us are dealing with is sleep quality. If we don't have that good sleep quality at night, we don't have that ability to restore ourselves and to really help combat the stress that we face during the day.

Of course, exercise can help with sleep quality, but also we talk about things like not eating for three hours before bedtime. That's going to help sleep quality.

Trying to stay away from alcohol, that's going to help as well, in addition to the regular exercise. Part of the job of the hormone replacement, especially hormones like progesterone, especially for women, help with relaxation, help with anxiety, help with sleep quality.

So we're working on those big things, exercise and sleep optimization. Yeah, that was very elegantly stated. To me, something that we're always looking for the next pill, right?

And something that is essentially free is movement. And I don't know any more potent factor that increases BDNF or brain drive neurotrophic factor. beyond exercise, it increases insulin growth factor, neuronal growth factor, fibroblast growth factor, vascular endothelial growth factor, I mean, the list goes on.

It preserves hippocampal volume. And again, we are, I almost see sedentary, almost, I call it sedentarism, like it's a disease. But what's interesting is that if you look at some of the indigenous tribes in the Tanzania and other parts, What was quite novel is most of these cultures are very sedentary.

The difference being is they're constantly incorporating little bouts of movement, whether that's crawling or squatting or foraging or just reaching to grab something or kind of being in a community where they're constantly playing.

And obviously stress is very, very different, but it's not the modern stress of our area where we're just constantly in our ruminating thoughts of, OK, I got to do this.

I got to do that. I got to pay the bills. I got to. So it's non-stop here, which is very, very degrading for the brain. When you mentioned sleep, that's when the brain really is able to heal.

I mean, I think it's estimated that it shrinks tremendously such that cerebral spinal fluid can usher in to wipe out all these damaged metabolites that kind of build up throughout the course of the day.

In terms of sleep, Are you providing any sort of strategies for your patients to enhance that? Because that's one where we really go deep into looking at HRV in particular to make sure that our nervous system is fully recovering so that we're ready to go the next day.

Yeah, I mean, I think you're so right. Really, sleep, the importance of it can't really be emphasized enough. And I think that there are so many ways that we can do it that are non-pharmaceutical, let's put it that way.

Just like we were saying, you know, regular exercise is great for sleep. It may be a little counterintuitive for some people, but you need to have that exercise to really help you with sleep quality.

Of course, what you're taking in during the day, I mean, caffeine is a big one. It's great if you can get away without using any caffeine, but for those of us who like a little coffee, as long as I'm trying to counsel patients don't have any afternoon, that's the best way to do it.

And that should help with being able to fall asleep more easily to stay asleep. Also, like we were saying before, And just eating late at night or eating close to bedtime really can impact sleep.

Maybe not even necessarily immediately, but it tends to cause more waking in the middle of the night. So having not only a good diet, but also just whatever you're eating, just to try to give yourself that three hour window.

Like if you have a bedtime at 10, try to stop eating by seven. Of course you can drink water, things like that, but try to keep the food window, you know, to give yourself that good three hours.

One of the other things I really like that's not a pharmaceutical but a mineral is magnesium. So for a lot of my patients, I say, listen, if you're still having issues, even by doing the things we just talked about, even if you're staying off your screens, which is another important thing, keep your phone away from your bedside.

If you're doing all that but still having some issues, adding in some magnesium before bed, say 250mg, 300mg, I found not only for myself, but for so many of my patients really can be a game changer in terms of helping to fall asleep and stay asleep.

Wonderful suggestions. Let's I think double click on the nutrition component. I know eating late is definitely destructive for the body to kind of get into this Delta sleep state or deep sleep.

But in terms of nutrition quality, are there certain foods that you're suggesting or certain foods that maybe you're suggesting we avoid? Well, listen, when we're talking about brain health, I think the big thing to focus on or try to focus on minimizing is sugar.

There really is a direct connection with diabetes, elevated blood sugar, and cognition. The more we can try to optimize our blood sugar, our hemoglobin A1c, the better off we're going to be in terms of our brain health.

I think number one, trying to get people to understand that we want to minimize simple sugars, of course, and also try to not have too much in the way of simple carbs.

So bread, rice, pasta, potatoes, I'm not saying that you can never have them, but try to minimize or even moderate, I would say. And then there are a couple of little tricks that can really be very effective in terms of helping to keep blood sugar levels stable and not spiking.

There's been data showing that if at a meal you eat your vegetables first, then protein, save your carbs for last, that helps to minimize blood sugar spikes.

So I try to counsel my patients to do that whenever possible at a meal. And then also, if they're able to, you can just take a 10-minute walk. after a meal.

That helps prevent the blood sugar spikes as well. And that kind of goes back to what you were saying about the indigenous tribes. Like even these short bursts of activity, they don't even have to be so high intensity.

Like even just taking a walk for 10 minutes can really have such great beneficial effects metabolically.

Nutrition, Blood Sugar, and Cognitive Health

And then that also translates into better cognition over the long term. I think you absolutely nailed it in the head. The elephant in the room, second to stress is our nutrition and our poor nutritional choices and our over consumption of sugar.

I mean, it's everywhere. Unfortunately, in the sad SAD standard American diet, this is what's driving diabetes, but this is what's driving dementia and Alzheimer's.

And to me, that's nothing more than insulin resistance in the brain. So when we look at this product of hyperinsulinemia, Not only is this driving obviously weight gain and visceral fat, which in itself has actions because fat is metabolically active and so it secretes specific hormones as well.

But whenever I counsel, as you said, my patients in terms of sugar consumption, that to me is like drinking shards of glass on the endothelial lining.

It drives hypertension, oxidative stress, certainly inflammation, and then it makes our mitochondrial unfortunately dysfunctional. But looking in terms of the brain, This creates a dysfunctional blood brain barrier and there's a buildup of beta amyloid plaque and tau phosphorylation which really is the root of what's driving a lot of this representation of dementia and worse yet Alzheimer's in our patients and it goes back to this hyperinsulinemia, hyperglycemia in the brain where it can't kind of clean it out and so this drives very low memory, very low brain cognition.

And it's this representation of excess glucose in the brain that the body is unable to process, if you will, that is really at the root of what I see is our modern society and the increase of dementia which afflicts most of our aging population.

Is this kind of how you interpret that as well? Absolutely, I think this is a huge factor. I mean, there's been just an explosion in type 2 diabetes, even among the very young.

So I think it's not surprising that we're seeing increased rates of dementia because of the way our diet has really kind of evolved, I would say even especially over the last 50 years or so.

It's really interesting and I'm sure you've had this experience too where When patients have come in and they've been able to, let's say, change their diet from one that's not so dependent on processed foods, trying to minimize the sugar, a lot of times, even in and of itself, they'll come back, let's say a month later, two months later and say, you know what, I really feel like my mental clarity is a lot better on this different way of eating.

So it's amazing how just that one facet can have a positive impact on brain health and mental clarity. Yeah, you're absolutely right. And some of the simple strategies you mentioned previously are quite paramount, just like a walk after a meal.

I know with my European counterparts, I have family in Europe and that's just standard. After you eat, you typically go for a walk. And I monitor, uh, my blood glucose much like I do with my patients.

And when using a CGM, there's a lot of actionable insight and you can see right away very quickly how it begins to drop just from movement after a meal.

Certainly the nutritional choices matter. The timing matters, which you elegantly stated earlier, not try not to eat late because we're a lot more insulin resistance at night while we are a lot more insulin sensitive earlier in the day.

And that also is in conjunction with melatonin. As melatonin begins to rise close to night, we become a lot more insulin resistant to the body prepares for bed and in a state to feed.

But needless to say, the quality of the food matters too. And when you said eating protein first and fiber and kind of saving some of these other carbohydrates for later in the meal, that also impacts how high the blood sugar will spike.

And our goal is with our patients is to reduce that spike to no more than 130. Ideally, if we can keep it in the range of 100, better still. And looking at our nutritional choices certainly has a huge bearing in that.

And so the three pillars I think that you speak about now, so looking at sleep, movement, and nutrition, while nutrition to me is probably the one that's the most personalized, I think to me this is probably the one that is often the most overlooked and maybe misunderstood.

Are you looking in terms of the microbiome at all and that impact on how kind of specific foods drive specific microbes, which then impacts the quality of our brain function?

Well, absolutely. I mean, I don't think we really. just kind of get a sip of the iceberg, but trying to understand the microbiome. But there's definitely not only a hormone brain connection, but a gut brain connection.

And those good bacteria that we want to have in the GI tract, they are key. And most of us, I would say most Americans, if they're following the standard American diet, that type of eating is really not promoting the good bacteria.

It's really helping the bad bacteria thrive which makes it harder to really extract whatever nutrients there are in the diet and it can also lead to inflammation which is bad for the body as a whole not only and of course including the brain.

So I do like to talk to my patients about the microbiome and to really suggest also a probiotic and a lot of times a prebiotic as well which is like the fertilizer for the good bacteria because I think especially in the beginning when someone's trying to change their diet, they need some extra help there.

And taking a probiotic just helps to ensure that we have the proper concentration of the good bacteria there on a daily basis. Yeah, prebiotics again, which for me very easily can come in the form of Food and some polyphenols or higher antioxidant foods, foods that are rich in fiber are going to feed our, our healthy microbes.

When looking at certain strains of bacteria in the brain, I know we're only scratching the surfaces as you just suggested in terms of kind of our microbiome in our brain.

So the brain biome. if you will, but already we're seeing signatures with dementia where there's an increase in porphyromonas, gingivalis, estaphylococcus, streptococcus, specific microbes that are typically resident to the mouth, which are now being found in the colon when we see SIBO or this higher representation of gram-negative bacteria and lipopolysaccharides, which very easily crosses the blind-grain barrier and gets into the brain and causes a very large inflammatory cascade.

So how do we kind of mitigate against that?

Gut Microbiome and Inflammation

Well, nutrition, getting in the right foods, making sure that the adhesions or the gut lining is intact and so too will be the blood brain barrier to making sure that we are not allowing certain pathogenic species cross and enter into an area where they shouldn't be.

And to me, this is a signature that we're finding very, very largely in our dementia and Alzheimer patients. And so we see there's a decrease in certain beneficial clostridia or eubacteria species.

There's an increase in proteobacteria like E. coli or shigella pseudomonas, which are often found in the GI tract and now found in the brain or there's sometimes an increase in dysphilibria when I mentioned SIBO or these gram-negative bacteria, hydrogen sulfide producing bacteria, which then too can cross the brain fin barrier.

And now it just causes a huge cytokine storm in the brain, whether it's IL-1-beta or IL-6, TNF-alpha, etc. This to me in conjunction with this insulin resistance model is what's driving dementia.

And now that we see that we can reverse that. Are you, I know, I know we were really kind of honing in our hormones, but are you looking at other such molecules or certain constituents that can help now reduce this

inflammatory burden in the brain?

Yeah, I mean, a couple of things you said super important. One, of course, neuroinflammation is a driver of cognitive decline. So we want to try our best to do whatever we can to decrease inflammation.

So that's your point. I mean, nutrition, we've always got to start there. So anti-inflammatory diets, which are really Mostly plant-based. I mean, I'm not saying everybody has to be a vegetarian, but the more plant-based I think the better.

If someone's going to eat meat, I think you want to try to get the highest quality out there. Grass-fed beef, a piece of grass-fed beef can have a similar omega-3 concentration to a piece of wild salmon.

So we want to try to go for the highest quality available. Plant-based fats like avocados, nuts, seeds, olive oil, all those things are anti-inflammatory.

Of course, minimizing the sugar is going to help fight inflammation as well. The inflammation piece is very important. One of the things I like to add in in my patients, especially if they're dealing with brain fog or cognitive issues, is a type of SPM, specialized pro-resolving mediator.

certain special type of omega-3 that helps to resolve inflammation. So I definitely do include that. And the other part that I just want to come back to that you mentioned was the importance of the oral microbiome.

I think a lot of people don't even Maybe think about that. What is their oral health like? Because if they're having a lot of inflammation, a lot of gum disease, high concentrations of bad bacteria there, that, as you were saying, that can go right into the brain as well.

So getting connected with a good dentist, going and getting your checkups, getting your cleanings, doing the proper health maintenance is super important as well.

in terms of trying to keep this inflammation down in the brain and really throughout the body too. Yeah, you know that. I mean, neuroinflammation is certainly at some point afflicting all of us.

Like if someone has any sort of brain fog or memory issues, loss of mental acuity, even migraines and headaches, how many of your patients are coming in suffering with those?

It's really quite common. And again, you know, we do talk about, what can we do to bring this information down? So again, going back to diet, talking about getting omega-3s, of course we can get some of those through the diet, but for a lot of people it can be challenging.

That's why we do talk about other types of supplementation, which might include something like an SPM as well. Yeah, I like to refer to SBMs as activated fish oil.

I like that. Yeah, because it works so well at clearing out some of these damaged proteins and the high inflammatory load. And so my connection with with kind of the, the obviously there's a hormonal component to the brain, which we're discussing, but then when I look at it in terms of the gut, when we lose beneficial microbes in the colon and sometimes when we had an overgrowth of bad microbes in the colon and sometimes they can ascend, you know, even 24 feet into the small intestine, this leads to this endotoxemia or this kind of constitution where there is too many gram-negative bacteria that shed their lining and then drives this inflammatory load, which we see very often in our SIBO patients, but this then can cross into the blood brain barrier, again, drive insulin resistance and accelerates this representation of beta amyloid plaque and accumulation of this plaque, which we've treated for so long, but that to me is actually a solution.

The body, I think, has this intuitive know-how to really sequester inflammation. And so when we try to rip out calcification of plaque or beta-animal plaque in the brain.

That's the body's way of trying to contain the damage that's being done. So, unfortunately, we're trying to reverse how the body's trying to fix the problem.

But the real root of the problem is our modern lifestyle and our choices. Going back to hormones full circle now, when people come in and you run some sort of comprehensive analysis and are you just doing a blood test in terms of hormones?

Do you like any other testing to discern where to start? Yeah, I like doing the blood testing. I know people have different views on that. Some people like saliva testing, but how I was trained and what I like best is just doing the blood testing for the hormones and just seeing where they are.

Of course, we're going to tailor it to the individual depending where they're starting off, what their age is, what their background is. We'll really work to just bring them into a good balance that will be supportive for the brain and also for the synapses, the connections between the brain cells.

So they come in, hormones are low, then are you immediately starting hormones or kind of what is the process for you? Well, I think, you know, we have this discussion.

Hormones are super important, but as we've been talking about, there are so many different facets that affect brain health. So it's one piece of the puzzle.

And if their hormones are low or out of balance, I do talk to them about, okay, these are the options that we have. to try to bring you back into balance that will be supportive for your brain and cognition.

Hormone Testing and Personalized Treatment

We want to take into account what their personal history is, if there's any history of, let's say, for women for breast cancer, or if they have a strong family history, we want to weigh the pros and cons of that.

And also, We want to look at their age where they're starting off. There is some data that says that for women, I think they look at women a little bit more so around menopause, the closer that hormone replacement is started around menopause, the better that is for cognition.

If that tends to have a better outcome, opposed to a woman who, let's say, is already 10 years out from menopause and is considering starting hormone replacement.

So, in a way, the pros and cons, the risks and the benefits, especially in terms of things like any kind of prior cancer history or also heart disease history as well.

And what about our perimenopausal patients? I see perimenopausal patients unfortunately much earlier and earlier occurring now. Are you suggesting the use of progesterone or DHEA or any sort of hormones in kind of the earlier years that are, that are quite protective?

Yes, we do. We work with peri-menopausal women a lot. And I would say that the two that you mentioned, progesterone, that tends to be the hormone that declines the earliest.

That can sometimes start to decline as early as age 35. Of course, depending on the situation, but often we would maybe start with progesterone for peri-menopausal women.

If they're still getting regular periods, then typically we would just use the progesterone during the second half of the cycle just to continue to support, mimic what the body actually does.

And as those fears become more regular, if they are regular, we can then consider going to every night as opposed to just during the second half of the cycle.

DHEA though is another hormone that we use. It's great because it's got beneficial effects in terms of energy, in terms of mental clarity. As of course you know, it can get broken down into other hormones like testosterone and estradiol.

So that can be a good benefit in and of itself without necessarily having to go to estradiol or testosterone right off the bat. Yeah, simple strategies to make a large impact.

You mentioned cycling. Are you cycling women in their post-menopausal years as well, or are you just keeping them on? I know there is a school of thought that likes to continue that cycling, but in my practice and my experience and how I was trained, once someone was through menopause, we gave them the progesterone every night.

does a great job in terms of sleep quality, also with mood, anxiety, really just kind of helps to calm everything down. So we'd like to give it nightly.

In terms of progesterone, interestingly, I found, I don't know if you ever tried this, but topically on the temples, your temporal lobe, so kind of up here, really helps with the onset of headaches or migraines.

And so we'll use a topical cream and have some of our women kind of rub it in whenever they're experiencing that. And almost instantaneously, like it cuts it out in half.

I don't know if you ever found that. I have not tried that, but I love that suggestion. So I think I'm going to keep that in mind. I appreciate you sharing that.

That's terrific. Yeah, it's interesting because looking at progesterone, obviously it improves GABA binding affinity. And so what happens, I've seen this also in kids now, and it's sad to see, but kids being born these days come with a huge disadvantage, not only with the plethora of chemicals in the birthing placenta, but also with some of these missing microbes.

and the higher presentation of ADD or ADHD, neurodivergence, et cetera. We see a lot of microbes that are missing that help produce GABA, which is our calming neurotransmitter of the brain, if you will.

Bacteria such as Bifidobacteria longum or Lactobacillus species help this Lactobacillus plantarum in particular really kind of promote higher levels of Gabin when we see some of these kids, you know, who are just constantly wired or acting out or kind of very in this aggressive representation, if you will.

And when we do a simple stool test, we see right away that some of these very, very essential keystones to strains of microbes are missing. That affects brain function.

But going back to progesterone, obviously it also impacts bowel motility. Right. I think often overlooked. And so going back to when you're administering hormones, but if you're not breaking down hormones and eliminating hormones, well, that too has a toxic effect.

I remember learning over a decade. I mean, one of my mentors always said, just assume everyone is xenotoxic, cortisol resistant in our modern lifestyle.

And that it's these deluge of just endocrine disrupting hormones that are now plaguing our society. Are you doing any sort of kind of clean out with your patients or looking at, you know, SIP genes at all in considering the administration of hormones?

Yeah, you know, I think it's a really fascinating area. I've not gotten into that area of the SIP genes, but to your point, I think it's really important to stress that that everything is working in concert.

So hormones are great, but you want to address the whole person because you're right, we want to be able to metabolize these hormones properly. We don't want to end up causing, let's say, an excess of certain estrogen

metabolites that can be harmful.

Again, I mean, everything kind of has to go back to the gut, you know, number one. So the better our diet is, the better able we're going to be to eliminate and to metabolize things properly.

But what I also like to do in terms of the gut, not only focusing on diet, which is number one, but again, coming back to trying to optimize the microbiome as much as possible, which of course diet is going to help with, but also maybe adding in probiotic or prebiotic, at least initially.

Something else that we like to do is taking a look at some of the estrogen metabolites. And if someone tends to be making a little more of the harmful metabolites, we will add in a supplement such as N-acetylcysteine, which we found to be really helpful in helping to clear out any estrogen metabolites that tend to build up an excess that we don't want to have there.

are supplements that we can add in like that. And also, I want to just give a plug for another hormone that we don't tend to think of as a hormone, vitamin D.

That's super important for the GI tract. We want to make sure we have optimal vitamin D levels because it does act like a hormone. We have receptors for vitamin D throughout our body.

But in the GI tract, one of its functions is to help prevent leaky gut. And to your point, we want to make sure that we're not allowing spaces to open up within the gut lining where harmful bacteria or endotoxins can leak through.

cause a whole inflammation cascade and cause all sorts of problems not only for the brain but through the rest of the bodies. We do look at other things like the adding in like a vitamin D supplement.

Most people tend to be deficient in D. We do check that as well as part of our initial panel. I love that you mentioned an acetylcysteine because when people are doing detoxes, if you will, and we're now living in this era where obviously we're just all toxic, the question is just to what degree, right?

And our body has been able to adapt largely, but That's where we see dysfunction creep up over time when the toxic burden just inundates and we're able to kind of clear it out.

But when we look at patients who are constantly trying to chase a detox through juicing or clear cleanses, they don't realize the six kind of different tiers of detoxification, whether that's glucuronidation or sulfation, acetylation, conjugation and the importance of amino acids.

When people are not considering certain nutrients you become conditionally deficient in cysteine which is the precursor of glutathione or master antioxidant.

So sometimes when people think they're doing a detox, they don't realize that's very amino acid dependent and amino acid being kind of the building blocks of protein.

So you have to consider other aminos like glycine or methionine critical for the biopteran cycle in terms of also helping convert to homocysteine, which is actually essential.

And then going down the route of glutathione, taurine, choline. And then all of these have specific precursors, different vitamins and minerals. I think vitamin D, you hit the nail on the head.

That's something so simple that we can control in some respects from supplementation or just getting outside, which we're not doing enough. We're not getting outside too.

play more to be exposed to the sun.

Thyroid Health and Closing Advice

In fact, we have now kind of this representation where people become allergic quote unquote to the sun, which to me that is more of a piling microbial issue or a heavy metal toxicity where then we cannot synthesize vitamin D through cholesterol from the sun.

But looking at other vitamins, I mean, the whole suite of bees is an example and we need bees through our microbes to synthesize the vitamins and vitamin K, which coincides with vitamin D, selenium, zinc, other immune boosting nutrients.

So there's a lot that I think that goes into it that's often overlooked in terms of how we can help our hormones function better because there's certainly precursors.

And I think you said it beautifully that hormones work in concert with each other. They are a family. So when you mentioned thyroid hormone early on, How much thyroid replacement are you doing?

Because this is a huge one, which we won't have time to discuss today, unfortunately. But when we're looking at 3T3 or reverse T3 or specific ratios or antibodies, we're finding that the thyroid unfortunately is the victim of a lot of our modern lifestyle and our choices.

For sure. Yeah, you're right. I mean, we could dedicate a whole few hours to thyroid, but yeah, I think it can, it's often overlooked. Absolutely. But it is super important.

But to your point that you just made, there's so much that our diet, our lifestyle, our stress, they really impact the thyroid functioning. So a lot of times if someone comes in and they're, let's say their TSH is not high, but it's maybe not optimal.

Let's say it's in the threes, close to four. And maybe the free T4, maybe on the lower end of normal. A lot of times I will just say, listen, let's give ourselves a month or two of really working on diet, exercise, sleep, stress reduction.

Let's repeat this and see where you are. I find that a lot of times when our patients can optimize those things, their thyroid levels come back into a more optimal range.

Now, often it doesn't work that way. And then you have to take the next step and consider maybe some supplementation with thyroid hormone. But I do really like to start with the basics because that really does have a big impact on thyroid function.

A couple last questions. So to bring this kind of full circle, if you will, if someone is concerned because they're struggling with mental issues, they come to see you.

How do they start? How can they get their hormones balanced? How can they replete their hormones? Where does it all begin? Right. Well, really all begins with just, you know, initial consultation.

We want to get the full background. When did these symptoms start? What's the patient's environment like? What's their family history, personal history?

We want to get all that information to try to really tailor things to the individual. And really from there, we want to get a pretty comprehensive blood panel.

Sometimes we also will initially do something like a microbiome check, not necessarily, but definitely start initially with a blood evaluation that will include all the main hormones, including the full thyroid panel.

estrogen, progesterone for women, testosterone for men, DHEA, et cetera. And then from there, we can look and see where are there imbalances or deficiencies and where can we intervene.

But again, the core things are diet, exercise, stress reduction, sleep. We always want to start with that. Two things that I want to underscore. Number one, test, don't guess.

Testing is so critical and so powerful. When you said a comprehensive analysis, I think that is absolutely key. And then the second is the environment and we can never heal an environment that keeps us sick.

And so being mindful about our environment is absolutely critical as well. Dr. Moreno, this has been absolutely wonderful. I genuinely appreciate your time and your wisdom and everything that you've been able to share today.

For our listeners, what's the best way that someone can find you, reach out to you to get started if they're interested? Yeah, they can go to DrRenaMarino.com and pretty much find me there.

That's probably the easiest way to do it. And yeah, we're welcome to any chance to interact with patients who need any help. The last question that I end all our episodes with is if you had one, if you could have any superpower, what would it be?

have any one superpower. The thing that came immediately to my mind because I've been a glasses wearer almost my whole life is if I could have, you know, supervision.

You're like the bionic woman. Did she have that one eye? Or was that? No, that was a bionic man. $6 million man. I would love that. Well, that's so interesting because that's so personal, right?

It's almost like we always want sometimes what we don't always have. Not to say that glasses don't suit you well, you look wonderful in glasses. But a wonderful answer.

If you all enjoyed today's episode, please subscribe, please leave us a review. It helps us expand and help more people who are looking for help and definitely check out Dr.

Moreno's website and the resources will be linked in the show notes. This has been an absolute pleasure. Again, thank you for your time today. Until next time, stay healthy, my friends.

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