Introduction to Hormone Heroines and Scoliosis

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And when you think of it in a neurological sense, 80 plus percent of all of my peripheral nerve pathways are serotonergic. So if I don't have enough seratonin, my anti-gravity musculature, and my postural control musulature doesn't get the same rate of firing and the the coordination ability as somebody else who does have normal serotonic production.

History is a hundred percent linked into scoliosis development. Do you feel like your hormones have turned against you? Trust us, you're not alone. We're Dr.

Serena and Dr Heidi and on Hormone Heroines we explore all the root causes that are behind hormone imbalances and we teach you how to thrive through them.

Join us for real talk, expert tips and even a few laughs. Hi, welcome back to Hormone Heroines. Today we're going to be discussing scoliosis and how functional medicine is revolutionizing its care.

We're gonna be talking to Dr. Mark Morningstar. He is a renowned chiropractic physician, clinical researcher, and the founder of Back Genius. With over 20 years of experience and more than 60 peer-reviewed publications, Dr.

Morningstar has dedicated his career to proving that scoliosis is far more that just a curve of the spine. Welcome, Doctor Mark Morningstart. Thank you very much for having me.

I appreciate it. So I am excited to dive right into this topic. Let's start off with, you know, educating our viewers a little bit more on scoliosis. So most orthopedic consultations focus solely on the cob angle, the degree of the spinal curve.

Why is viewing scoliosis as a systematic biological condition rather than just a structural one? The key to comprehensive scolisosis management. So I think first and foremost, the, you know, classically anyway, everybody, if you say the term scoliosis, I mean, even if I were to say, walk into my local community and ask a hundred people what scoliosis is, a 100 out of 100 people are going to, say it's this curve in your spine on an x-ray, yada yadda.

And that certainly is part of the condition, but it is not representative of entire condition. And I say that because it doesn't take but a very quick PubMed search to realize that there have been different associations of various hormone issues dating back even into the mid 1980s.

It's just the problem here, of course, in the United States is that conventional medicine is very compartmentalized. And unfortunately for this patient population, it's a pediatric orthopedic surgeon that's usually spearheading the management of the condition.

Scoliosis as a Whole-Body Condition

And obviously hormone management is not in their wheelhouse. Digestive issues are not their wheels. Neurological asymmetries and things like that, that happen in scoliosis are in wheelhouses.

And so those things largely get glossed over. But yet those are all of the things that either outright triggered that curvature to start in the first place, or at least at the very least allowed a small curvature, to increase to the point

where now doing something about it becomes necessary.

Nice. I never even really would have thought of that. You know, I mean, we, deal with the functional, We deal what the gut, with deal hormones all the time.

So we know that there's not a lot that have a of regard for different systems in the body when it comes to conventional care. We really like functional medicine.

And in functional neurology, they always talk about the brain's map of the body. How do you use neurologic or neurological retraining to help a patient's brain realize their spine isn't straight?

And why does traditional bracing often fail to address this? So first and foremost, I think what's really interesting about scoliosis, and again, this isn't new information and this is really sort of the frustrating part for me, professionally speaking, is that nobody takes advantage of this information really.

You know, it's been well established that scoliosis at its core is a somatosensory processing disorder. You know, it's, not getting the information from the periphery and having the right outputs, or at least say having asymmetrical outputs.

And the consequence of that is the curve and the, and this really kind of sort of, you know blows people away when they think about it. But rather than viewing the curb as sort this random event that happens due to all of these factors.

It actually becomes quite interesting when you think that that curve is actually there because the brain put it there as an adaptive response to these other problems.

You know, for example, being obviously we're, you know the crux of our podcast is on hormones. There are hormones that signal for, especially during adolescence, that's signal the spinal column and all of your skeleton to lengthen during growth.

Well, there are other hormones and also signal your spinal cord to strengthen proportionately. Well, the problem is when that doesn't happen, of course, to spinal cord is housed inside of the spinal column.

And if the spine column is growing and lengthening faster due to differences in hormone signaling of. The bone structures versus the neurological structures, you get this sort of disproportionate rate of lengthen.

Which causes a certain amount of vertical tension on the Spinal Cord. Well of, course as we can imagine the tensile strength of The Spine Cord or neurological tissue is not nearly what it is of bone tissue.

And so as soon as you get this increase in vertical tension on the spinal cord, which was actually first studied in the late 1970s by a German neurosurgeon named Alf Brieg, that the spine basically, or I should say the brain initiates kind of like this coil down effect in order to try to reduce that vertical attention on spinal chord.

And the coil down effect becomes the curvature that we see on the x-ray. And now, of course, when we really talk about the brain, the brains chief purpose, is survival.

When posed with a problem, The brain tends to always favor the solution that favors survival in the short term, even if that's at the forsake of the long term.

Because obviously if I can't survive the next 20 minutes, then the 20 years doesn't matter. Right. And so the brain intuitively says, Hey, look, I can function and have a pretty normal life with a curve, but I cant have normal and I'm not going to survive probably if I have torn spinal cord.

So the curve is really an adaptive response. And then when you really look at it that way, it says okay, is it really a good idea to just randomly go in sort of willy nilly and push on a.

If the brain is really putting that there to adapt to other problems that forced that to force its hand to make that decision. So really it really behooves practitioners from a comprehensive kind of a management strategy to try to identify and mitigate all of the underlying reasons as to why the.

Brain had to choose and make.

Neurological Retraining and Postural Control

Okay. Wow. I never really actually thought about it that way so much. Yeah. It makes sense though. Yeah, well, and so that's where a lot of the neural hormone aspects come into play is because, again, a of it, it's not necessarily about right or wrong or abnormal or normal, but it is really more just about differences in symmetry.

You know, for example, its well known that kids who develop idiopathic scoliosis have differences and the vestibular information going to the brain from the inner ear on both sides.

And they have differences in the information coming from the muscles around the eyes that move the ice going back into the brain and giving the bring that information.

And if the, brain all of a sudden has to take two separate pieces of information and try to mesh them together, you now get delays in coordination and processing and balance and all these other things that idiopathic scoliosis patients tend to have more frequently than the general population.

Okay, so then going a little bit more into the retraining. So we were asked like how you do the neurological retraigning to help the patient's brain realize the spine isn't straight versus traditional bracing.

Can you elaborate on that a bit? So when we talk about spinal muscle control or coordination and probably in a more 50,000 foot overview sense postural control in general, Postural control or spinal control is really governed by two primary neurological mechanisms.

You have what I always describe to my patients as the autopilot setting, meaning as we're all sitting here having a discussion, we'll just kind of sitting in our own natural posture that we are used to, whether that's good or bad.

It's just what our brain thinks is normal because it's what has become the habit over time. However, at any time we can all just sit up nice and tall and go into a nice full, you know, sit-up straight, like my mom used tell me and probably a lot of people's moms should tell their kids nowadays.

And so as soon as I consciously sit up tall, I'm now engaging what I call my manual override and, and which, so both control mechanisms have to be retrained in scoliosis management.

But the reality is my. Manual override. As soon, as my conscious attention goes back to our conversation, i'm just going to kind of ease back into my natural resting posture again, because that's my habit.

That's, my autopilot. And so the, you know, so when you look at a full upright, say, 16 hour day, my autopilot setting for postural control is really what is in control for 99 point something percent of the day.

Whereas the manual override is control, for fragments of a day when I'm trying to make conscious changes in my standing or sitting posture. So it's important to train both, but obviously much more important train the autopilot if I want to get a lasting benefit, especially when I have a curve that is being actively compressed by gravity.

So a lot of this is not necessarily just teaching a different motor habit in that way, But it also teaching how to give all those muscles to work together from a stability perspective, Especially as that child is growing so that they're not actually growing into their curve.

Okay. Gotcha. So obviously retraining it the younger, the better. For sure. Absolutely. And it's not to say adults can't too. It's just the way you have to kind of dive into an adult case is a little bit different in terms of hierarchy of

symptoms, probably compared to a child.

Yeah. You know, because obviously they're going to be natural differences in spine flexibility in a 13 year old versus a 55 year-old, you know kind of a situation.

Plus now you're dealing with bone density issues potentially if they are peri or postmenopause. So there are different layers to it that you have to kind to take up at the same time, but those are still all equally important to manage in all scoliosis cases.

Yeah. I mean, and now that we know that it's not like just bad posture, are there other genetics that play a role, like specific genetic markers, maybe those affecting vitamin D, you talked about bone health, any collagen synthesis, does that predispose some children to the rapid curve progression or is there are other things that should be looking for too?

Yeah, good question. So I was part of a study with a group of pharmacogenomic pharmacists from Mayo Clinic. a few years, a couple of years back, three years ago.

And one of the interesting findings of that study was that we took a group of patients from my office and studied their rates of curve progression over time, just based on their genomic inheritance patterns.

What we found is that in studying specifically the COMT variant and the MTHFR variant, because of course those are the ones that most people are going to have at least heard of.

Well, what we found is that in children or individuals who had both of those variants compared to having just one or the other or having neither of them, people who add both them their curves were far more likely to progress 20 degrees or more.

from the time of initial diagnosis till the that they were done growing. And that's just studying those two genes in general. So what we've also gone through and do and have been doing for the last seven to eight years or so is really kind of diving into different genomic variants, but based on common metabolic purposes.

Okay. As an example, methylation is what really drives epigenetic expression of a lot of this stuff.

Genetics, Neurochemistry, and Hormones

But everybody really only hones in on COMT or MTHFR as far as the methylation cycle, not realizing that you have MTR and MDRR and all these other things that are also involved in that pathway.

But a lot of those genomic variants sort of get ignored, even though they're all fairly equally responsible for different aspects of methyulation. And so rather than to just look at any one of the SNPs, we tend to look more at them into sort like metabolic groupings, if you will.

based on common physiologic effects and see, okay, if I have a particular patient who has enough of these common variants from this particular enzymatic category, now I consider that category impacted.

And so what we then try to do and what I teach our doctors is that you can use that then to sort of create a prediction right from the outset to set up families to have realistic outcomes and expectations.

For example, if I have a child who I test genomically and they end up coming back with very high genomic risk, it might well be that their genomics risk is so high or so present, let's say, that it may not matter what we do for them treatment-wise, they're probably going to end as a surgery candidate.

So at least then we can have that conversation right at the beginning, say hey look, we're still going fight this tooth and nail. But recognize that with your daughter's genetic risk, this is a little bit higher of a likelihood than in some compared to somebody else.

Okay. Gotcha. And it's just that, like you're saying with the vitamin D and bone health, a lot of the genomic variants that we're looking at are things that have direct downstream consequences that can readily handle from a functional medicine perspective.

Okay, that's fascinating. So we've touched on also how like neurotransmitters can affect the spinal alignment a little bit. Can you explain how chemical imbalances in the brain can physically manifest as a curve in spine or just elaborate a bit further on what we already touched and how that signaling affects it?

Again, so that that is actually some of the first data that has been out in PubMed. I mean a lot of people if you go back again, into the 1980s, you're going to find a bunch of studies where they took the pineal glands out of chickens and rats and did all these kinds of animal studies to see, okay, if now I'm deficient in melatonin or serotonin, what happens?

And in chickens who are pinealectomized, they develop scoliosis. In rats who have their pinea glands removed and are made to become a bipedal, in a bi-pedal position, They also develop Scoliosus.

So that was kind of the initial foray into saying, you know, melatonin has a very big impact on the development of scoliosis. But then it wasn't, then kind evolved and now it's not accepted that's necessarily just a deficiency of melotonin, but it was more like a signaling dysfunction of Melaton or in melotonic receptors.

And again, some of that not surprisingly is genomically inherited. but also one of big keys that a lot of people sort of glossed over early on, But this is also published.

is that a lot of kids with scoliosis were deficient in serotonin production. And of course, seratonin metabolically converts right into melatonins. So I think what maybe some people were seeing on the melotonins side were possibly being misinterpreted when it was actually serotonin was the real culprit all along.

And when you think of it in a neurological sense, 80 plus percent of all of my peripheral nerve pathways are serotonergic, meaning they're governed by seratonin.

So if I don't have enough serotonin, my anti-gravity musculature, and my postural control musulature doesn't get the same rate of firing and the coordination ability as somebody else who does have normal seratonic production.

Okay. And so neurochemistry is a hundred percent linked into scoliosis development. Then on top of it, now if you're in a position where you are trying to fix scoliosis or improve it somehow through a conservative means of some type, if that patient doesn't have enough serotonin and I as the practitioner don't do what I can to try to replete that, Serotonin is also responsible in the brain in tandem with progesterone in affecting my BDNF receptors to initiate the development and reinforcement of long-term motor skills and motor memory, of which postural control is one of those things.

And so if I don't make an effort to restore all those things, in frankly a lot of cases, the benefits that they might get from their exercise therapy or wearing their rigid brace or a combination of those thing is probably doomed to fail at some point.

Well, with it going with progesterone, I don't know if it's just that we notice it more when they're teenagers and going through puberty or maybe scoliosis often explodes during puberty.

I'm not sure, but what is happening hormonally? Because we know hormones are all crazy during puberty. They kind of up and down and all around. Are these growth spurts?

Are they kind, is the ups in all of the hormones kind acting like gasoline on the fire for a spinal curve? Or is there something we can do to maybe balance the hormone to kind slow it down?

Does that really affect it? It does. I think if you were to look at a child's growth chart, it really looks very much like a five-year stock return. You know, it's not a linear rate of increase.

It's these things where you grow and then you're going to kind of flatten for a while and grow, and kind level out. And it just keep laddering its way up.

Well, during those spike times of active growth are where the curve starts to really have a potential for progression. Now, historically, if you take a female, for example, because of course males don't have periods, so it so much harder thing to predict.

But in girls, and especially from a day-to-day patient management thing, it's the moms who are usually more intuitive on picking this up than dad is by far.

I hate to say that, that's just the truth. Mom or the patient are pretty intuitive about, okay, puberty is coming. All the signs are there, maybe she hasn't had her first menstrual cycle yet, but everything else is really there.

Well, in terms of growth, You know, that main growth spurt really kicks in about two, three months prior to their first menstrual cycle, typically, and then keeps going for about six months after the first period.

So that window of time, the eight or 10 month window time is really the highest risk time for a curve to rapidly progress. And it can do so on the order of, you know, five degrees a month during that high risk time.

That's a lot. And again, that's of course when the most of the hormone changes are taking place. One of big ones we see, estradiol has long been studied in scoliosis patients, but it's really more been in adult scoliosis patients.

But hormone status is really kind of… I mean, it has been touched on in adolescent cases, But not that much. In fact, one of a big things we found is in girls with idiopathic teenagers with Idiopathics scoliosis, we did from our office a lot of salivary hormone testing.

And what we found is that teenage girls was scoliosis have only about half of the progesterone as their non-scoliosus peers do. Their levels across the lifespan don't actually match up until they are postmenopause.

on salivary hormone levels, which is quite interesting. And of course, you know, most people understand what progesterone does from a reproductive health and function kind of a reason.

But in adolescence, projesterones biggest purposes are, like I mentioned earlier, the development of long-term motor memory skills, but also the projesterone is what signals for bone mineralization.

And if you're low on progesterone, you not going to get the same rate of bone mineralization. Well, guess what they also know for a fact, kids with scoliosis trend towards osteopenia, even as teenagers compared to their counterparts.

Hmm. Those have to be linked because there, there isn't anything else that's that off that would be signaling for that bone density mineralisation. Right.

And now, of course, I'm not a fan of giving a child progesterone because I want them to produce their own hormones. So we're more on the precursor sides of things.

You know, whether it be from pregnant alone use or, you know retinal palmitate or you other things like that to try to encourage normal progesterone production.

And then even from a dietary side of things, but the, really that becomes the goal is just encouraging the body to kind of catch up and, and you do what it's supposed to be doing.

Okay, wow. That is very interesting on a hormone perspective that I had not considered. But kind of circling back to how everything's all connected, because we've talked about the brain and hormones now, let's talk a little bit about gut-spine access.

How do inflammation and nutrient malabsorption in the GI tract affect the neurotransmitters and the status of scoliosis? I know, you know our gut makes a ton of serotonin and we already touched on that.

So let's dive into that aspect. Yeah, no, absolutely. So quite interestingly, so just to give you an idea, kind of merging the concepts of, like you just said, with serotonin absorption, even going back with some of the genetic predisposition.

so we look at it, we actually have an algorithm that we use for our patients, for like risk assessment in effect, that look 28 different genomic variants for scoliosis onset or progression.

Not coincidentally, literally 14, half of those 28 genes all have to do with gut health or processing of something in the gut. So whether that's histamine degradation, whether it's DAO production, those kinds of things, Those are all gut mediated problems that tend to pop up much more commonly in the idiopathic scoliosis group.

And it is so much common that to the point that a couple of years ago, there was a study published where they finally created a term that fit this called functional gastrointestinal disorders in scoliosis.

And the reason being is because scoliosis patients so much more commonly report these chronic sort of diffuse non-specific GI symptoms, but they don't really necessarily have labels for them outside of like IBS.

And so rather than to try to make it a weird label, they just said, look, patients with scoliosis, you guys have all kinds of gut problems, so boom, here's your label.

Not that I'm a fan of labels because I am a functional medicine guy at heart, You know, the point is that speaks to how frequently kids with scoliosis are having GI problems.

And like you said, it severely impacts serotonin production, you know, absorption utilization impacts, um, norepinephrine metabolism. I mean, there are other ones that even get impacted.

You know the, the glycine GABA, teeter totter sort of gets impacted by that as well. And all of those have impacts downstream on different enzyme reactions that manifest within scoliosis, especially during growth to the point that.

A lot of those neurochemistry issues, if you don't help them, no child ever really actually gets a very good benefit from exercise-based scoliosis therapy.

Okay. Well, I mean, speaking of that, because I know that a lot times, you know, in the standard orthopedic community, not functional medicine, but I knew a lotta times they just advise for like the mild curves to just watch and wait.

Gut Health, Nutrients, and Watchful Waiting

From your perspective as a functional medicine person, why is this period actually the most critical time to intervene with nutrition, neurology, rehab, maybe braces?

I don't know. Why would that be the more important time? And I know what I'm thinking, but from your perspectives, since you do this all the time, I'd love to know a little bit more about what you think about watching and waiting like most people tell you.

Well, I think about it when I'm pretty sure most every mom and dad feels like when they're in that position, it's just like, i don't know how in the year 2026, you can consider doing nothing, a treatment option.

I mean, that just, That blows my mind. You know, like to literally have a doctor tell you, we're just going to wait for it to get worse and then do something about.

And then by the time it does get worse, now the focus isn't on improving it. They just say, well, we're going to put a

brace on Sally because, and the purpose of wearing his race is literally to just keep it as bad as it currently is.

We just don't want it to get worst. No parent out there is comfortable with this process. It's just, they're never given an alternative strategy. And so they think there's nothing else out.

Well, obviously, it's only logical sense that it is far, far easier to be proactive working on a 15 or a 20 degree curvature. and getting very significant improvement in that curvature because it's much more flexible than say a 30 or a 40 degree curvature is to where now we have much better outcomes.

But it just, the problem is people are never given this information in the conventional pathway. And so by the time they find a practitioner like me or somebody in our network, it is already at 30, 40 degrees and now they're just doing, they are grasping at straws to try to prevent the chance that it reaches a surgery threshold of 50 degrees.

And so really what I try to tell everybody is even if you are fine doing nothing from a physical treatment perspective, that doesn't mean there isn't something you can't do metabolically, genomically all of these hormonally, all these other things to minimize the chance that this curve really becomes worse.

And funny enough, early in my career, I used to get tagged for this all the time. Like you're a huckster, you a quack because how can you expect vitamins and supplements to fix scoliosis and all this kind of stuff?

And it's not that it fixes scoliosis, but what was interesting is recently there was a study published by three pediatric orthopedic surgeons out of Romania.

And what they did is they took a whole group of their young patients, young scoliosis patients who were very newly diagnosed. So all curves, you know, in the teens.

so all by default then in a strategy of we're not going to do anything yet. What they then did, is took that whole grouping of kids, split them into two groups where one group continued to just do nothing.

And then the other group, they literally just put them on three nutrients, 2000 units a day of vitamin D3, 600 milligrams a days of calcium, and one and a half milligrams of day melatonin.

And again, most people think of melatone as a sleep thing or, you know, mood thing, but in reality, it's also signals for bone lengthening. So they put the other group on those three nutrients, and lo and behold, their curves did not progress nearly as frequently or nearly rapidly as the kids who continued to do nothing.

So at the very least, why wouldn't you do something like that? Because there are just such innocuous nutrients anyway, especially at that age. Frankly, everybody should be on that stuff.

Yeah. It's kind of funny because we're naturopathic doctors. We're like the OG functional medicine doctors, right? We use melatonin in cancer patients.

You know, we use it to help them with inflammation. 20 milligrams and above really helps great with the inflammation, it's not just for sleep. But I never ever would have thought or went back to training and thought about it helping with bone health, honestly.

I just never put two and two together because I don't know. It's very interesting though. Again, even in the more broader general functional medicine circles, you don t hear about it for that particular purpose.

But very early on in my career, it just became obvious, look, functional Medicine is hugely important, especially for this particular patient population.

Okay, so, excuse me. We've talked about how nutrition and neurology and all those aspects and hormones can be functionally optimized to help improve scoliosis, but I know you have actually developed something called the Scoliosus Activity Suit.

which differs from the traditional like rigid plastic bracing that we're more familiar with as like the gold standard for treating scoliosis. Can you tell us a little bit more about your suit and how it's different from rigid brasing?

The scoliosis activity suit is actually something that I created after visiting several therapy clinics in Europe that were scoliosis dedicated clinics using a lot of what they call kinesio taping.

And most people who have watched any kind of, you know, Olympic athletes or, uh, they have tape all over their shoulders. That's all kinecio tape. It's a very stretchy kind.

They were using this literally in a pattern where they were winding the tape around one leg and all the way up the torso up to the opposite shoulder. and kind of creating almost like a spiral kind effect.

And I had never seen that, and this was back in 2005, 2006, somewhere in that range. So I came back home and instantly started doing that in my own practice and started to see very, very cool things happen on x-ray while they're wearing the tape and just even immediate postural changes and things like that.

But the problem with that taping became that the glue on the take, once your skin starts reacting to it, you can't use it anymore. And the tape only lasts three to five days at a time.

And now you're expecting the child or the family to remember how to put that tape on every three or five and it just gets a bit cumbersome logistically.

It also hurts when you rip it off. Exactly. So that's where the suit really was patterned after is just figure out how can I transmit that same rotational kind of force into something that they can wear repetitively?

And that is where it came from. What the suit basically does is the soup basically creates a stimulus that the body has to react against. Kind of like a Newton's third law of motion thing.

You know, my body pushes or I push the, body, pushes back. Well, that also works in three dimensions. So if I introduce a force in the body, the, body has to react to that force and an equal and opposite direction.

And all I'm doing with the suit is trying to set up the direction of that stimulus so that the resulting adaptive response happens to be a response that, also fights that child's curve counter or adults curve as the case may be.

So it is technically an exercise device and that's how it was patented as. So, and obviously that a lot different than a brace because when I, when somebody wears a hard brace, it's just providing an external passive force that, you know, can't really react against you.

The Scoliosis Activity Suit and Adult Care

I'm straight, which is good because you need that for ligament stretching and soft tissue lengthening and the promotion of normal growth during nighttime, you know, to try to promote more symmetrical lengthen.

But they work on two entirely different mechanisms. So very frequently we will use them in tandem with one another, knowing that they, one is more of a muscular or a neuromuscular driven process.

And the other one has purely a growth modulation process and we'll use one day at day and night. Okay. And a lot of that also was just born out of the fact that rigid bracing historically has a very, very low rate of compliance.

And so ultimately the best treatments are the ones that patients will actually do. So if I can have a patient, most kids, what do they say? I don't want to wear my brace to school.

I do not want wear to dance class or basketball or whatever they're doing. But we get very, very little resistance with them, at least just sleeping in it.

So if we can have them sleep in, which of course is when they're growing anyway, then we're still getting the benefit of that brace without having the drawbacks of wearing it during the daytime, not just socially, but from a deconditioning aspect, because now the brace is really your passive support.

And during the daytime then maybe they're wearing their activity suit for two, three, four hours, depending on their age and getting a lot of muscle firing and different neuromuscular responses reinforced and ingrained.

to promote active stability during the daytime. Okay. So now you said adults could wear it too. I know a lot of adults are actually told that their scoliosis is set and there's nothing that can be done except for like pain management or, you know, here you go.

You're going to be in pain for the rest of your life. This is what you get. How does the functional medicine approach help them? Because, they've already grown, They've where they're going to be, you know, height-wise and that kind of stuff.

And you did say that the activity suit that you dig, that adults can wear it. Can you kind-of explain more that maybe adults CAN help fix their scoliosis and then it's not just that, like, kind what we know of?

And again, funny enough, when the suit was first created, the entire intention was to do it for kids, you know, growing children who had a curve, but very, very quickly in use, it became much more of an adult driven kind of a thing.

And that makes sense considering most adults with scoliosis come in because they're having some type of chronic pain, whether it be hip pain and shoulder pain back pain or what have you.

So they have a natural impetus. you know, constant impetus at that point, staring them in the face saying, Hey, look, I need help. My back's killing me.

Well, Obviously, the nice thing with a suit is that they get a tremendous amount of pain relief fairly quickly. You know, usually within the first 30 days of wearing the suit, they feel much better.

Of course, as an adult patient now, we start to have to go going back to the functional medicine concepts. We have go back a lot of the things of, okay, where are you at life stage wise in terms of hormone status?

Do you have any bone density issues in that regard? And did you any of these other symptoms going all the way back when you're a child? So for example, You know, there's a difference between an adult who has a new onset scoliosis, you know as a, say a peri or postmenopausal adult versus I'm an adults with scoliosis, but that's because I had it all the way through since I was 12 years old.

It just wasn't bad enough to do anything about when I young, But here I am now and I've 45 and now my back's killing me and, I feel like my, back is getting worse.

Because at the time when they were young, nobody did anything about it. Well, of course, here's the rub. All of those things that I mentioned earlier that initially caused scoliosis to happen, don't just magically go away because that child became an adult.

So all of things are still there underneath the problem. They still have to be addressed. And a lot of times, especially as an adults, because their motor memory habits are all so ingrained and all, everything that they have is just so rigid and set.

It becomes even more imperative to work on those thing to have a chance to try to re-ingrain new motor skills, new habits and that sort of thing. Not to mention you have to at that point also do things to work on their flexibility by and large.

Whereas you don't with a child. you can still work on adult curves and you could still improve adult curve. And I

realized that a lot of the conventional wisdom is that once you're set, you set.

But there's enough adult scoliosis research out there published that shows that doing certain things can improve curves even in adult patients. It's just the problem is, again, in the United States, conventionally speaking, a pediatric orthopedic surgeon who's managing a pediatrics case, when that patient turns 18, they age out of that surgeon's care.

So the surgeon really frankly has no idea what's going to happen to that person when they're 50 years old because they are not their patient anymore. And that surgeon by that point has probably long retired.

So they don't really ever get to follow up. And in fairness, sort of the drawback in managing scoliosis over the long term is the fact that I'm working with kids now who I'll never see them as 50 years old because I won't be in practice by the time they're 50. You know, that's the hard part.

And also it doesn't really behoove a surgeon to read exercise-based scoliosis literature, because that is not what they do. Part of that too, when you say that, is I think some of it is a little bit of confirmation bias, where even some surgeons say, well, exercises don't work because every one of my patients that comes in to see me has tried exercises and they failed.

Well, of course, if the exercises helped, they wouldn't have needed to come see you. So you're not getting that patient population anyway. You know what I mean?

So even practitioners on my end of things have confirmation bias in the sense that it's easy to say surgery is bad because all I ever see in my office are all the people whose surgeries went terribly wrong somewhere along the way.

And now they need help because of it. If the surgery went swimmingly well, they're not going to come in and see me. Right. Right, okay. Well, this has been super interesting.

I never realized how much hormones played a role in scoliosis, let alone all the other aspects that we talked about today. But to kind of wrap everything up, Um, so if a parent or I guess, since we were just talking about adults for an adult, yeah.

An adult for that matter. If they get diagnosed with scoliosis and are feeling overwhelmed by the traditional methods of treatment, namely the surgical path, what are the three most important biological markers they should ask their doctor to test for?

And can you give them like three tips that they could start addressing now so that. Can hopefully have a better outlook. For sure. Well, so I would say for the adult patients, I will say first and foremost, it's always a good idea to have a updated idea of your bone density status.

Currently, you know, run into far too many adults who have never had a baseline bone, density scan, DEXA scan done. And that's one of the first steps in determining, what's going on.

Because if you are actively losing bone-density, your curve is going to get worse. It's just a fact. They feed off of one another. And so if you don't address that declining bone density, no treatment of the curve is going to produce any reasonable benefit.

I would say in children, I think the best test to get is genomic testing. So like, for example, in our office, there are, you know, that you can use all of, the major commercial ancestry.com, those kinds of labs that, can you use to, get your raw data file.

It's just, we use a different company to then take that raw, data, file, and create a scoliosis-specific report to help us kind of predict, you know, risk of progression, things like that, and eventually risk-of-onset in children who don't even, as of yet, have a curve, but they have all the genetic markers that make them look like high-risk scoliostomy.

Testing, Takeaways, and Show Outro

So I would say kids, the DNA testing is very important and adults bone density scan slash markers like osteocalcin, you know, a DPD urine cross links test, maybe an NTX, whatever you're familiar with, but something to give you a ready up-to-date value on your bone.

Okay. Okay, nice. Well, thank you so much. It has been a great pleasure having you here. I learned so, much like we talk about hormones and gut health all the time.

All the, time and I never, I, never once put two and two together with bone health. Why? I mean, bone, health, yes, but not scoliosis. So thank, you for telling us, huh?

I said we're always thinking about bone health and perimenopause and menopausal. Yeah. So I guess I have with bonehealth, but not necessarily scoliosis.

Thank you so much for everything. It's been a really great time listening to all these things that I never really would have put two and two together.

No, I appreciate it so. Much. Thanks for having me on. Very fun. Have a great day. Thank you, you too. You know how us women are always just pushing through it, and then when we go to find help, we're often not taken seriously or told, oh, that's just far to be in a woman.

Yeah, We've lived through, prioritizing everybody else, And then our own health falls to the wayside. That's why we started blossoming longevity by women or women.

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