Lifestyle Medicine Foundations

Well, my biggest piece of advice is to start with lifestyle standing. What you can do from a lifestyle approach. Everything else will come in. In turn, it foundational.

I always say if you're going to have a thousand piece puzzle, the 600, you always start with the rim, right? You always start with the frame is pretty good.

So the 600 surrounding pieces of this thousand piece puzzle are lifestyle. And then the center is pharmaceuticals and hormones and these other things.

But you got to start with the outside. So master lifestyle medicine issues and then take courses in functional medicine which should be just called medicine because if you don't know how yeah, I think you should.

A basic idea of cell processes, of pathways, of interactions between organ systems and so on, like just foundational how do mitochondria work and and the basics of cellular processes and pathways and enzymes.

Then you will just be upon of big pharma, just like robot symptom, this symptom, this drug, This is doctor talks. Real talk from real doctors. Only issues that matter to you most.

Hi. How's it going? My name is Doctor Ivan Roscoe. I'm the host of the Lifestyle Medicine podcast, brought to you by Access Medical Labs, and I have got a treat for you today.

I have Doctor Gerst with us who is one of the leaders when it comes to everything female hormones, PCOS, you name it. She is a leader in everything. I think she's probably populated health.

Introduction to PCOS and Female Hormones

Half of South, California out there is a legend, I gotta say. She has, a book out. It's pcos, S. O. S., it's a gynecologist lifeline to naturally restore your rhythms, your hormones, and most importantly, your happiness.

Doctor Gersh is an absolute pleasure to have you on the podcast. Thank you for stopping by. Well, it's my pleasure to join you and to talk about anything that has to do with female health.

See, I love that when you're so good, you can talk about anything. But today, I know it's unique. I, I think I would like to talk to you about something.

I think you know, I think it's one out of ten women suffer from, which is PCOS. Sure. That we think it's higher than that. In fact, it may be at least 25%.

It's it's, comes in a spectrum. So, you know, everyone is not the same severity, but it is hugely common. It is the most common endocrine disorder of women, the most common problem in terms of infertility.

So yes, it's a massive problem. Know for sure for sure. And so in your practice, out of everybody that you actually have come through the door, are you diagnosis most of these people based on symptom alone.

Are you actually going into the actual lab testing with them? Well, PCOS, which stands for polycystic ovary syndrome. And the name may actually be changing.

I mean, there's a whole movement to change the name to make it more in alignment with what's really going on, which is involving a lot more than the, the, the appearance of the ovaries.

But this name is going to stick. I know how it works in medicine. Even if you come up with the new name, the old name just drags on with the new. But basically the main takeaway and that does involve lab testing is that PCOS is a diagnosis of exclusion.

You have to make sure it's not something else. Another type of androgen excess disorder. You know, androgens are like the male type hormones. There's a variety of other causes that can give you very similar clinical presentations to what happens in PCOS, which of course, we can talk about, like, you know, what does it look like, what's going on?

But you have to exclude these other conditions to then leave with the diagnosis of you have PCOS. So no matter most of the patients who come in with PCOS that I see have already been diagnosed from somebody else by somebody else, and they're looking for better treatment, their thing, you know, like, what the heck is happening?

And I'm not getting where I want to go, but they've been given that label. Sometimes it's accurate and sometimes it's inaccurate. I always start from scratch and really make sure that the diagnosis is actually even accurate to begin with.

So what are some of the most common symptoms that a patient with something such as PCOS, would actually exhibit? And, you know, I can kind of explain, one of the most like I would say, top three things that, okay, you might have PCOS if okay, well, the top three things is you actually supposed to have two of the above?

Okay. At least for all three, it's the most common. That would be some type of irregular cycle. So it could be that you have too much bleeding or too little bleeding.

Like maybe you go months and months without a menstrual period. So irregular cycles. That's like classic. The other is androgen excess. Now the androgen that should be an excess to be PCOS is testosterone, which is produced by the ovary and the adrenal gland.

But this would be testosterone primarily from the ovary, which the only way that you can really know that is by looking at what's going on in the adrenal separately.

But so it's testosterone excess, which will then give you all the manifestations of androgen excess, which would be cystic and often recalcitrant, really hard to treat acne where you get these big cysts, the deep ones, they're painful and they are scarring.

They will often give you scars over the lower part of the face, but it could even go elsewhere. It could be on the chest, it can be on the back. So it's it's like really miserable, excessive body hair, predominantly hirsutism on the face.

So, you know, women will often have like a beard type of thing.

PCOS Symptoms and Diagnostic Criteria

Now if it's like a true extreme beard, then it's usually a different form of androgen excess to be that extreme. But it can actually be pretty moderately bad.

I mean that you can see 5:00 stubble, you know, and and they go and do different kinds of hair removal techniques. It could be waxing, it could be, threading, it could be lasering, you know, or could be like shaving twice a day.

So there's like a, you know, variety of things to, to deal with this because it's such a drag on a woman to have these masculine type features. This is not the epitome of wanting to feel feminine and good in your own body.

And then there's androgenic alopecia. That's the hair thinning version in women. That is sort of the the female version of male pattern baldness, where they get really, hair thinning.

So it's what happens in androgenic alopecia is the hair goes through natural cycles, it grows at rest, it falls out. And when you have too much androgen, the cycle shortens.

So they have a shorter growing phase. And then it goes into the resting and then inevitably the falling out phase. And each time the hair falls out, the follicle that the hair grew in before it actually gets smaller.

So it's miniaturization of the hair follicle. So the hair over time gets finer. So you have less volume. Each hair is thinner, it's less volume. So it looks like you have less hair on your head because the volume is so much less for each hair.

But eventually the hair follicle actually closes completely. And then no hair will ever grow from that follicle. So over time, the hair becomes finer, thinner, like with beer, and then less, you know, just less coming out of the hair follicles.

Also a real ego buster, you know, for women. So that's the androgen excess. And then the third one is one or both of the following, which is on an ultrasound of the ovaries.

They have the signature polycystic ovaries which would be and you never see the radiologist counted. But it should be at least 20 of these tiny little follicular cysts, their little tiny circles with fluid.

And they are around the rim, or what we call the cortex of the ovary. So that's why it's been called a string of pearls. It kind of looks like little circles all the way around, like a little like necklace of pearls.

And that's and it should be at least on one ovary that you have at least 20 of these little tiny follicular cysts. And then a new criteria that fit in is an elevated hormone called anti malaria in hormone A blood tests.

Right. So you want to get that on adults. By adult I mean at least 18 years of age because it's not it's not a reliable test in younger kids okay. So the criteria for diagnosing PCOS in a young teen is not as simple in a way.

It's more complex because a lot of young teens will have acne and they'll have, some elevated androgens. So it's a little iffy to diagnose before the age of 18.

It's more like you would say PCOS trending, you know, than a definitive diagnosis in someone who's like 15, you know, but, you know, that doesn't mean you can't do stuff and know what's going on with the the hormones.

Because once again, you want to rule out that they have one of the other conditions that can give androgen excess. So basically that's like the, you know, the, the criteria for making the diagnosis.

And those are like just the basics that isn't getting them to the metabolic dysregulation that accompanies PCOS. And this is super curious to hear about this aspect of it as well.

When it comes to like, you know, how people feel, the overall aspect of, you know what this does in the overall, you know, the metabolism on a system as a whole.

So, I mean, if you could please dive into that. Absolutely. Because until relatively recently, and this is part of the reason why there's a, a group that wants to change the name to be more telling of the metabolic dysregulation that's accompanying PCOS.

So for years and years, and most of the research was done in terms of fertility related issues, that's the that was the main one, because women with PCOS do have very high rates of infertility.

They also have high rates of pregnancy complications like gestational diabetes, pre-eclampsia, gestational hypertension, higher rates of miscarriage, premature deliveries and so on.

So most of the research was involved in those areas. But when you understand the underlying mechanism of

PCOS, which is in the ovary, you have this process where you convert testosterone, which is made in a certain group of cells in the ovary.

And that's where all estradiol, the estrogen that comes from the ovary, is called estradiol estrogen. And that's where measuring hormone levels comes in as Phrygian is a family of hormones, it's not a hormone just like B vitamins.

It's like you have a deficiency of B vitamins. Then you say, what, like B12, it's not the same as B. What exactly? And just like B vitamins, it has a letter, in this case a big E and a number one, two, 3 or 4.

And the the estrogen made by the ovaries is called E2 extra dial. And that is made 100% from testosterone. No estradiol exists in the human body that isn't derived from testosterone.

And no estrogen is in the human body that isn't derived from an androgen of some kind. So in the male hormone family, because there are other androgens like DHEA, DHEA, a DHS always has to be measured.

We'll talk about that because these are part of the ruled out. And to see what's going on, looking at the adrenal as another source of androgens. But if we look at the ovary, the ovary has special cells that make testosterone, and then the testosterone moves down the line, the assembly line to the next group of cells, the granulosa cells, where they are then, working to convert that testosterone into estradiol.

Now, all of this relates to the hormones that are coming from the pituitary gland, which you also need to measure this luteinizing hormone, LH all of this is under the control of the brain.

The hypothalamus of the brain, which puts out little signaling factors to the pituitary gland, also called like the master gland. And then the pituitary gland under the direction of the brain puts out luteinizing hormone.

That's the hormone that tells the ovary to make testosterone. And then FSH follicle stimulating hormone. That's the hormone made by the pituitary gland to tell the ovary to make tests, to make the estradiol from the testosterone.

But oh, in the ovaries of women with PCOS, there is too little FH that's being made in the pituitary and the ovary is not. And we don't even know why that is.

But we know the ovary doesn't make the enzyme aromatase that converts the testosterone into estradiol. So basically you have a situation where the brain which has sensors to estrogen but not to testosterone.

The brain does not control the testosterone based on the level of testosterone. It controls the testosterone based on and for the ovary based on the level of the estrogen.

Okay, so we don't have sensors in the brain for testosterone, just estrogen. So if you think you ladies. Yeah, right. This we would always be bad men. Right.

So then if it's so if the ovaries are making two little estrogen, which is what happens in women with PCOS, because the enzyme under the direction of follicle stimulating hormone isn't producing the proper effect of converting testosterone effectively and efficiently into estradiol, the brain says, oh, no, we don't have enough estradiol.

So it tells the pituitary, put out more LH, more luteinizing hormone, please.

Metabolic Dysfunction and Hormonal Imbalance

And then the ovary will respond, because the ovaries really good. It's a different skill set to make testosterone. Then to convert testosterone to estradiol, the skill set to make testosterone is like top of the line.

So the luteinizing hormone goes higher and higher, and the testosterone production from the ovary gets higher and higher for the purpose of making more estradiol.

But, oh, because you don't, you have this, like little defect. You can't convert properly the testosterone into the estradiol. So you effectively have two little estradiol.

Now, that's why in terms of doing lab testing, you want to always measure your LH and your FSH. And you look at the ratio. The classic ratio is really high LH to low FSH at least usually three times the amount of LH luteinizing hormone to follicle stimulating hormone MSH.

Normally the ratio except for the the the day prior like to ovulation. The ratio is normally 1 to 1 not 3 to 1. So that's another tip off that you have a problem with overproduction of testosterone and under production of estradiol.

Now when you, when you test, I mean, like for you, like when you're, when you're testing, this is a little phase, follicular phase mid-cycle or or does.

Well, the thing with women with PCOS is they often is no phase, you know, because they're cycles are more irregular that we often really don't have a choice.

But if we did have a choice, then I would probably usually get at mid luteal phase, okay. And then at the same time I would get an estradiol level and I would get a progesterone level if you actually had that phase.

But you know often we never know where they are in the phase. So we just get it, you know, and it typically will be a high ratio like whenever you get it because you make as you dial through the whole, the whole cycle.

But it's really, you know, you can't always time it because we don't have a cycle typically. But what happens and this is like a really key part of the metabolic problems.

Getting back to like what you know, what is going on metabolically speaking, estradiol is the master of metabolic homeostasis. So if we talk about like what the heck is metabolism anyway?

It's the production, storage, utilization, distribution of energy, which is a critical issue. And and energy is the spark of life. If you have no energy, you're not alive.

It's like if you think of electrical energy, you think of, well, the heart. You know, you do an EKG. If your heart has no energy that's flatlining, that's like, you know, oh, we know that.

We've all seen that on TV, right? For virtually the same thing for the brain. Then you call it brain death. This is like when you don't have enough energy.

We have to have energy. And estradiol is the master of creating energy. It's the master of functional mitochondria, fat tissue. Like all the different organ systems, there are receptors for estradiol.

And we'll leave progesterone out for this story just because it's, it's important too. It's like we don't want to underestimate it. But if we were going to use an analogy and I have to come up with a female version of this, maybe you'll come up with something.

Get back to me. It would be like that man and Robin, like they're a team. But if you're going to have a hierarchy, Batman is like above Robin. Like, you know, rejection is a little below estrogen, but they're both.

Yeah. Okay. I got you both important, you know, like, without, you know, Robin, Batman can be in pretty big trouble. So we need we need both. But in terms of, like, there are receptors in every organ for estradiol.

Because in the end, this is really simple to. When you really think about this. I figured this out when I was doing thousands of deliveries that the whether we want to have babies or not is personal choice.

As far as I'm concerned, and recognizing that only humans are the species on planet Earth that tries to control their reproductive destiny. Like if you have a bunch of dogs, they don't think, I don't think this is a good year to make it

this month.

You know, I don't even think about it, not even a little bit you know. So you know that's not you know it built into nature but only humans do. But when we get over that part, you know, the prime directive of life is the creation of new life.

And to that end, you need to have a healthy for for the the female part. You need to have a healthy woman. And pregnancy is now recognized as the ultimate stress test of a reproductive age woman.

Like, oh my gosh, if you fail pregnancy like you have a pregnancy related complication, we now know that bodes poorly for what's going to happen when you go through menopause, because you're already on sort of metabolic ice here, you know, thin ice here that, and then you didn't, you know, you pregnancy tests, your metabolic functionality and the, the thing is that in order to be healthy, to be fertile, to get through pregnancy and then raise your children to their sexual maturity and do it multiple times over, you really need a healthy cardiovascular system, like in pregnancy, women have more than 50% the blood volume to pump around, so you need to have a really robust, healthy cardiovascular system, mitochondria.

You need to have a really functional immune system that's like amazing that it doesn't kill the fetus, but yet it keeps the woman alive. I mean, we have a different immune system than men.

Women have more white blood cells. They make more antibodies. That's why 80% of autoimmune diseases occur in women, because when things go wrong, they go wrong in the bigger really wrong.

Yeah, they go big wrong. Right. So we have to have this incredible immune system. We have to have, of course, a functional cardiovascular system. We have to have musculoskeletal, genitourinary, neurological system.

And all of those systems rely on estradiol. In fact, the master clock that sits atop the optic nerve that creates our time clock for this circadian rhythm is completely dependent on estradiol.

That's why in menopause and this has been shown in women with PCOS who are more like perimenopause, you know, they don't have enough estradiol, but they still have estrogen.

Totally different underlying causation. But similar effect, not enough estradiol. They live in a body that is perpetually jetlagged. In fact, they're even studies showing flipping.

And this can be tested flipping the circadian rhythm where instead of having high cortisol in the morning and low at night, they have low in the morning and high at night.

So at night they suddenly get an appetite. You know, they're feeling more awake. They say, I'm a night owl. No. Your circadian rhythm dysfunctional. No.

But they you know, it's like and you can of course measure cortisol levels. And that is another thing that happens. So they have they have essentially the equivalency of jet lag.

They have circadian rhythm dysfunction. And when you don't have enough estradiol you don't make energy. Well your mitochondria don't work properly. Your vascular system is not healthy.

You don't make this really important gas called nitric oxide that maintains vascular health. Now we can measure nitric oxide, but we can measure a surrogate marker Adama.

So there are different markers that we can look at in women with PCOS that will give us a clue. Women with PCOS tend to have leaky gut impaired gut barrier, and that causes a lot of of the gut contents.

The microbes and other toxins we call them LPs, lipopolysaccharide, or endotoxins, to come between the cells of the lining of the gut into the body itself and causes the immune cells that are embedded in that, what we call the

gall, the gut associated lymphoid tissue, where a big percentage of the immune system lies around the gut to create an inflammatory response and effect as a response to the leaking of these toxins coming into the body.

And you get inflammatory cytokines being produced, which can also be put, some of them can be measured, and you can look at the surrogate marker, high sensitivity C-reactive protein, which is deliverance response to high levels of circulating inflammatory cytokines.

So we can measure this inflammatory response. And because there's so much inflammation that triggers insulin resistance. Yep I know. So isn't that something that's a huge formula.

You know our body is one one intricate machine isn't it? I know women with PCOS typically have significant insulin resistance and their development of diabetes is seven times higher by age 40 than the average population of women.

So we of course can use lab testing to measure looking at insulin levels, blood sugar levels. You know, you can do you know, glucose tolerance tests as well when necessary.

The bottom line is that women with PCOS have systemic low level inflammation, insulin resistance, low levels of nitric oxide and vascular dysfunction.

And because estradiol is key to the production of the neurotransmitter acetylcholine, which is the main neurotransmitter of the vagus nerve, which is key to functional health of the autonomic nervous system, which controls everything we don't think about, like our pulse, our temperature, if we're sweating, you know, like if we're a Turing are in our eyes when our saliva comes out, like all the things, like when our bladder wants to empty, like the things we never think about and you don't have when you have PCOS, you don't have proper function of your autonomic nervous system.

The vagus nerve is what's important for parasympathetic function, which is what should be the normal baseline, sometimes called rest and digest. You know, so that your gut has normal motility.

You're in a calm state. And so women with PCOS tend to be more in a stressed state, which is called the sympathetic. And that causes like more what we call adrenergic.

That's part of the stress response. So they put out more cortisol which then causes more leaky gut, more stress, more insulin resistance. So you can know exactly a snowball effect.

But we can measure all of these things with lab testing so that we know, I always say, you can never monitor what you never measure. Exactly. You know, all these things.

And the thing that is so un like unbelievable really, is that these women, many of them are in their 20s, their 30s, are so young at the time of their life when they should be most fertile, you know, just beginning their careers and their families going.

And here they are having irregular cycles in fertility when they do get pregnant, high rates of pregnancy complications. And they have all these metabolic problems.

And because they have dysfunction of their mitochondria and their adipose or their fat tissue, severely overweight and obese, because it's a different skill set once again, to burn fat and to create fat.

And when you have insulin resistance, which is pretty much universal in women with PCOS, you have high levels of insulin all the time. And insulin, which is vital to survival.

If you don't have insulin, you'll die. You know that it's not like the optional, but once again, it's like too much of a good thing is a bad thing. We need insulin, but too much.

You then have problems because insulin is the hormone that promotes the production and storage of fat. So women with PCOS do not have the proper mitochondrial function, which is how you burn fat.

And they have too much insulin, which causes too much production and storage of fat. So they have a lot of weight loss resistance. It's really hard for them to lose weight.

So, you know, it's like insult to injury, acne, facial hair, hair thinning, obesity and all these metabolic problems and reproductive problems. And it seems overwhelming.

But the first step I always say in solving a problem is to understand the problem. So by doing proper lab testing and saying, okay, well how is your your inflammation?

And then because you have so much leaky gut impaired that barrier function, you're going to have alteration of digestive processes. So often you'll have nutrient insufficiencies like, you know, vital things like iron could be low, you could have low B12 omega three.

You know, any vitamin or every vitamin can be low. And women with PCOS because of leaky gut that creates like a chronic infection because you have bacteria coming in continuously that can actually predisposed to autoimmunity.

Women with PCOS have high rates of Hashimoto's thyroiditis, autoimmune thyroid disease, because the antibodies that are created by our immune systems that are against the bacteria leaking into the body can cross react with our own tissue.

Inflammation, Insulin Resistance, and Autoimmunity

It's called molecular mimicry. It's like mistaken identity. There's similarities in the nuclear structure of thyroid and other tissues to the bacteria that are leaking from our gut, and the immune system, like mistaken identity, makes antibodies to ourselves as well as to the bacteria.

And so we have to test for for auto immune. We have to test the antibodies involved in hypothyroidism. And of course we have to test for hypothyroidism.

So low thyroid and Hashimoto's are really common in women with PCOS multiple times higher. So estradiol regulates the immune system because it is a free immune cell.

Every immune cell has an estrogen receptor on it. And one of the important types of immune cells are called T regulatory cells. They help in a variety of ways, including preventing autoimmunity by helping us to recognize our self from other alien tissues and antigens.

Other types of proteins and women with PCOS have low levels of T regulatory cells. So you can see it's it's a big complicated mess but complicated. My goodness.

It's like an encyclopedia writing. I love it because that's why I call PCOS the signature condition of metabolic dysfunction. If you can master PCOS, you can master any metabolic condition that the body can face because it's like a Super Bowl of women.

It seems to me like it's the big that well, but the good news is that there are things we can do. It's not like, oh, it's hopeless, give up, you know, and throw it, throw in the towel and go in the corner and you know, and just give up.

Not at all. By understanding, by testing and understanding each of these things, we can work to help restore the gut microbiome and gut integrity we can give.

I prescribe instead of birth control pills, which are like fake hormones for human. They're you can give bioidentical hormones so you can give you know estradiol to low.

We can give back estradiol. We can measure levels. We can give bioidentical progesterone and bioidentical progesterone is anti-inflammatory. It also down regulates the testosterone receptors, you know.

And then of course so we can do all of these testing and then we can actually come up with therapeutic approaches. And once again we have to rule out the other conditions that can mimic PCOS, which include adrenal tumors, acquired or late onset adrenal hyperplasia, basically, issues that are involving the adrenal gland.

So if you think, well, where do androgens in the like male type hormones in the female body come from? 25%. Yes. So 25% of testosterone comes from the ovaries in a normal woman.

But where does the other 75% come from? From androgen precursors to testosterone, which are mostly coming from the adrenal gland and 25% of actual produced testosterone comes from the adrenal gland.

So, you know, we have to think adrenal function. And then you can have Cushing's disease and Cushing's syndrome where you can have elevated, hormones from the pituitary adrenal control in one that isn't totally measurable.

You can have elevated cortisol. We can check 24 hour urine cortisol. I mean, a lot of this may go through an endocrinologist if you don't have the background, but at least you but somebody who has the knowledge will be doing this testing because then you can rule out, you know, Cushing's syndrome, adrenal tumors.

You can also rule out special tumors from the ovary, too, that, you know, that can produce excessive, like, huge amounts, like male levels of testosterone and so on.

The hormone prolactin, which is made by the pituitary gland, if you have high levels of prolactin, it affects the adrenal gland. It may block one of the enzyme systems.

And then you end up going down the pathway and you make more DHEA vas and then more testosterone from the adrenal. So you have to measure prolactin. And high levels of prolactin will interfere with the menstrual cycle.

And you may have no cycle or you may have irregular cycles. So, you know, you have to measure prolactin, you have to measure cortisol. You have to measure sometimes 24 hour.

You maybe want to get four point cortisol. You're going to measure DHEA. That's really important 100% of circulating days. The dihydrogen epi under Austrian sulfate, 100% of 100% comes from the adrenal gland.

So if you have high DHEA as it's it's adrenal origin and of course, some of it, you know, usually if you have high DHEA, you're also going to have some degree of high testosterone coming as well from the adrenal.

So, you know, do you have to go through this workup or else you're going to miss serious things like, you know, like all these other adrenal related problems.

The problem due to is critical. What you do, are you testing things like, free testosterone versus testosterone or DHT and things like that that are going to be more strong on the the overall androgen spectrum or not?

I usually do measure free testosterone. I also measure sex hormone binding globulin. So glad you brought that up. So sex hormone binding globulin is really important to measure.

When you have high levels of insulin and high levels of testosterone, it will often suppress the production from the liver of sex hormone binding globulin and testosterone is 99% bound, like in the blood most linked to sex hormone binding globulin, which holds it tight like superglue, and then some to albumin, which is a little bit looser.

But when you have really low sex hormone binding globulin, it means you will have more unbound or free testosterone free to do what? To act on the receptors in, like the skin, like the skin, and elsewhere.

And then you'll have more of the androgen excess, you know, acts, you know, acne, hair loss, you know, facial hair and all of that. And the total testosterone may be mildly elevated, but because you have such a low sex hormone binding globulin, the unbound testosterone or free is like really excessively high.

So by looking at all these measures now, I typically don't measure dihydrotestosterone only because it's a Paquin created hormone. That means it's made in the tissues itself, and only a tiny bit will actually circulate.

Most of it is made in like the skin, and it stays in the skin. So, you know, but the reality is that when you have inflammation, unfortunately, the men and women with PCOS have a lot of inflammation.

It up regulates the enzyme five alpha reductase, which is the enzyme that converts testosterone into the more potent form dihydrotestosterone. So we know by measuring inflammation markers that that they definitely will have more of the DHT because they are going to upregulate that enzyme so we can know it indirectly.

So super, super important factor when when it comes inflammation. And again, like I tell everybody, I have one of the most in-depth blood tests you could possibly find that actually used access.

It's great. And I tell everybody, the only thing I'm really looking for is either stress or inflammation in the system, because if you can go out for that, you're, you're, you're you're kind of diagnosing upstream.

So if you had to sit there and say, you know, some of the top three things that you think might be stimulating some to have PCOS, or it could be like heavy metal toxicities when they're younger or but it'd be things like hidden infections like Candida, EBV, CMV, things like that that stimulate the cascade of inflammation that could then lead to PCOS or whatever they're planning on calling here and in the next couple years.

So if you had to theorize again, I'm not gonna hold you to it. Do do you think there is a there there's a causative agent for PCOS or do you think it's something genetic, or is it something that we're eating or the high stress lifestyles or poor sleep?

What would you think is kind of be the number one stimulating aspect of PCOS? And and it's so rampant today. Well, all the things you mentioned are contributors.

So it starts with genetics. We know that if you, have someone has PCOS, there's a 50%, not 100%, 50% chance that they will have a first degree relative or a second degree relative with PCOS.

So it would be like your mom, your sister, your and your grandma, you know, had PCOS as well. So there's a genetic component, but it's so different now than it was, say, a few hundred years ago.

In fact, we think that the ancient form of PCOS was probably a selection advantage for women because they were just slightly making too much testosterone, but just slightly because, needs that, you know, with the FSA and the enzyme aromatase.

But it was very slight. So they had a slight built in contraception so that they would be less likely to die in childbirth or have too many kids they couldn't take care of.

So they had this slight. If they weren't sterile, they were just slightly less fertile. But just like they also had a little bit extra testosterone that made them braver, bolder, more dynamic.

In fact, they were probably the leaders of their tribe. They were like the star women. And in fact, when they tested testosterone, endogenous testosterone in Olympic gold medalist, when winners were women, they have a slight higher level of natural testosterone.

So they're stronger, they're bolder. They're like more dedicated. They're braver. So it used to be like a real plus. And I like to emphasize that with my patients, like you come from the best genetic background, but modern society has turned against you.

So it starts with in utero exposures to endocrine disruptors. Now, they could be metallo estrogens like, we know chromium, mercury, they actually are endocrine disruptors for estrogen.

So heavy metals can be a component. There's been the most research on the bisphenol BPA. Bisphenol A has is very high levels concentrate in the fetus more than in the mother.

So this is ubiquitous. Everyone is now being exposed to BPA and it comes and goes quickly, but it keeps coming back. That's the problem. So and it concentrates in the fetus and it's a massive endocrine disruptor for estrogen but also for melatonin.

For testosterone. It's like it's just terrible. And then we have phthalates. You know these are like in soft plastics and so-called fragrance sense and things like that.

And they're also in a lot of personal care products. And these get into the fetus as well. And then of course, there's in childhood and during critical like pubertal times of life.

And so it's all the endocrine disruptors. And then not only do we have the plastics and the heavy metals, but we have, you know, flame retardants, PCBs.

I mean, it's like endless these endocrine disruptors and then like light like you mentioned like light. So we live in a world now where we have circadian rhythm dysfunction because we have too much light exposure at night.

And this suppresses melatonin and keeps our cortisol too high. And we know that there's melatonin problems in women with PCOS. That's so it gets even more complicated.

And of course our sedentary lifestyles. And then the, unfortunate ultra processed food. So it's what we eat and what we don't eat. The ultra processed food with all the chemicals and the nutrient depleted and the lack of adequate fiber, you know, natural fibers and that nourished the gut microbiome.

We know, contribute to damaging our gut microbiome. And at a very young ages. And also then you get leaky gut, which then creates more inflammation, etc., like we talked about.

So the diet has changed, in fact, changing to a plan focused diet with lots of natural fibers, lots of diverse polyphenols, the antioxidants and the minerals.

The vitamins can make a world of difference for women with PCOS.

Causes, Triggers, and Modern Lifestyle Factors

And then and then we have this chronic stress that you mentioned, like, like people are put into situations where they they just feel stressed all the time.

You know, emotionally stressed and physically stressed, you know, from lack of adequate sleep. And then just like in school, they may feel stressed, they may be bullied, you know, so there's all kinds of things that can create chronic levels of stress which then create, you know, a cascade of, of health problems.

So it's like the multitude of, you know, toxic environment, toxic food, inadequate exercise, inadequate sleep, too much light, you know, and it's all come together in this perfect storm that takes women who have a propensity to not make enough estradiol properly and just put them over the edge.

You know? So it's, it's really something that understanding the cause really helps to put it in perspective and understanding that the basic foundations of women with PCOS are not damaged and not damaged people.

They actually have a big plus going for them of the little bit extra testosterone. It's just blown into this exorbitant overproduction. And this is treatable.

And understanding that we can measure so many of these things. I measure heavy metals. I'm glad you brought that up. I measure heavy metals, testing heavy metals and EBV and all that stuff with that.

Yeah, hopefully. I mean, I measure it, I love data, I love data, so it's like, yeah, I love how were you going to know what's going on if you don't collect data, you know, medicine.

You know that's the future. You know, personalized dumped estrogen on it. Just keep dumping dump and it's it's like no it's a mercury toxicity. It's a chronic EBV reactivation.

So Candida infection there's a mean of a thing. Oh my gosh. You know especially since Covid I measure so much Barr virus for reactivation. That's crazy.

The amount of reactivated CMV I'm seeing right now is that it's mind mind blowing. Yes, absolutely. And women with we know women have this more like I talk about more robust immune system and chronic infections underlie which leaky gut is a chronic infection, but so is chronic Epstein-Barr.

So is chronic covet. Chronic infections underlie autoimmune diseases. You know, so it's it's like a double whammy. You have a chronic infection. Plus you increase the risk of autoimmunity.

And we know that women make up 80% of people who suffer from autoimmunity. So these are like really major things to look at. And I test and I'm like, oh my gosh, I test an antinuclear antibody on everyone.

And you're doing battle does. Yeah. And positive doesn't mean ignore it and wait to see if you get a full blown better drug. Yeah. Forget that positive or that's how you care.

You know that's what rheumatologists do because I mean I mean the question then is look for insurance and figure it out. You know, know if they'll say come back when you have really severe symptoms.

But that's not our approach in functional medicine. We want to be proactive by repairing leaky gut, by looking for chronic infections, by repairing lifestyle issues, you know, so that you can reverse early stage disease like early diabetes.

It's reversible, late stage disease, end stage disease. You can do something good, but you're not going to reverse end stage heart failure and stage renal failure just that's not possible in stage osteoporosis.

You're going to fix those bones when they're like like paper thin. But we are not about letting things get to that stage. You know you want to intervene.

So much easier to fix than that actual curative, you know. And you know, it's always one of those situations that when you take a look at medicine from a 30,000ft view, I always like to say you see a lot more of the actual person.

And then when it comes to a treatment process, which is what you do, and I, you know, I was nerding out on your page, Bob, before this, I love to see that.

It's more of a, like, like you said, an integrative, functional approach to it. So where we aren't just looking at cysts on the ovaries, you know, I mean, like, those are most likely just a byproduct of everything.

It's the stress you're going through. I would love to see the correlation between smartphones and the increase in PCOS. You know, I mean, like just the amount of stress that a smartphone has, plus the light and the calcification of the pineal gland before bed. So bad sleep.

No delta. I mean, you can you can go down such a rabbit hole on this one. So yeah. So it seems like I think we're both coming to coming to the actual conclusion of is that stressful lifestyles are probably one of the biggest factors that that factor into what actual PCOS is, as well as the actual propagations of its, of its symptoms.

Absolutely. I actually have published papers in medical journals on exactly that topic on where you have to send it. Yeah. Yeah, sure. And, it is definitely exacerbated by modern lifestyle problems.

We can say you know, it's a problem and it is a big problem because it is interfering with the quality of life of such a large number of women. I mean, it's heartbreaking when when you see that and also, you know, it's heartbreaking that that patients are not often diagnosed correctly and they're treated in a very, non lifestyle form, you know, it's like they're and even I'm not against drugs at all.

But you know, the solution is never a drug by itself. You know. So even if they go on GLP one receptor agonist, which are so popular now that you can't just do that alone.

Because if you don't, if you ignore the diet, they're going to lose a lot of muscle. If you don't do fitness exercise, you're going to lose a lot of muscle.

And muscle is what burns glucose and fat. Yeah. You know, if you lose a lot of your muscle, you can lose a lot. You will then get much higher risk of diabetes.

It's like the antithesis of what you want is to lose muscle, especially in someone who's already in a situation of severe insulin resistance and they need to have muscle to burn.

They need functional muscle. So, you know, I have so many worries about these drugs. I, I understand the pluses, but I also know the minuses, you know, but they even when, when they're used, they can't be used in a vacuum.

And that's often what's happening. You know, they you have to test, you have to measure, you have to monitor all of these things to to see what's happening.

And, you know, to make sure that you're actually not doing more harm than good for the long haul. You know? Exactly. And I, I think, a lot of physicians can correlate that, you know, the more lab testing, the more you treat not only does obviously better for the practice and the business aspect of it, but for the actual efficacy of what you're actually delivering.

And I've been seeing just in this industry, I mean, I've been here 15 years. You've been here longer. Just just to sit there and see that now you see this huge rush into the anti-aging industry or the wellness industry or whatever you want to classify this whole. Yeah, yeah, yeah.

And it's very malleable. But you're seeing a lot of physicians jump into it who are just sitting there saying low testosterone, given testosterone. That said, they're not thinking about negative feedback loops and not thinking about what that can convert into what that does to the overall immune system, this, that and the other.

So it's getting kind of scary to see how many people are just jumping into this and just being like, oh, it's I saw someone's low give them this estrogens low give them this when they aren't, you know thinking 5 or 6 steps down the process as well as what as why that, that that hormone might be off or that, that, that, that that biomarker might be off.

So it's a breath of fresh air, to speak to a fellow physician who kind of sits there and I think gets it. I think precision medicine is is the true form of a traditional medicine is broken.

The third leading cause of death in the United States is medical error. You know what I mean? Whereas now, though, the whole wellness industry is starting to get that point where it's just becoming gimmicky and, you know, you know, by cranberry juice to cure this, you know, well, I, I can't agree with you more.

I talk about this like if you talk about men in testosterone, if they have high levels of inflammation which hasn't been measured or addressed, they're going to have inflammation.

I remember inflammation upregulate, the enzyme I mentioned, five alpha reductase. Yes. That's why men who tend

to have balding and a lot of body hair tend to have higher rates of heart disease.

And like this because that it's partially a reflection of genetics, but it's also a reflection of inflammation. But it also inflammation upregulate the enzyme aromatase.

So when you give the men the testosterone, they're going to convert more of it into estrogen, which for a man you don't want all that estrogen. You know, really important, but you don't like everything has a sweet spot.

You don't want to have more things back. But that's how men get so-called man boobs, right? We don't want that. You know, at prostate hypertrophy, you want enlarged prostate.

That's the prostate is the analogous gland to the, the uterus. And if you have too much inflammation, it converts the testosterone into estrogen. And the estrogens create a lot of growth factors and growth factors that are uncontrolled leads to, uncontrolled growth.

And you get a growing plus, you know, it's in the game, right? Can't throw testosterone in an absence of lifestyle changes in monitoring and measuring.

So you know, that's it's and yes, you're right that there are many that are going into this anti-aging field or whatever longevity you can name. They've so wellness and they're not looking at the total picture.

And so you have to measure you have to monitor and you have to understand what is happening. You know I know I was well I gotta say this has been a very, very fun podcast.

I have I, I've learned a lot, which is it's just tough for me to sit there and actually wrap my head around it. But I must say, you know, everything that I've read on the internet about you was 100% genuine.

You are a master of what you do. So I, I really can't thank you enough for, for, for for for stopping by. I always like to with all my guests. I'd like to ask two questions, and I say, give me the elevator pitch for both.

Number one, for a physician looking to get into the wellness, anti-aging, regenerative, integrative field, what is your biggest piece of advice?

Treatment Approach and Precision Medicine

Well, my biggest piece of advice is to start with lifestyle. Okay, understanding what you can do from a lifestyle approach, everything else will come in in turn.

But it's foundational. I always say, if you're going to have a thousand piece puzzle pieces, 600, you always start with the rim, right? You always start with the frame, right?

So the 600 surrounding pieces of this thousand piece puzzle are lifestyle. And then the center is pharmaceuticals and hormones and these other things.

But you got to start with the outside. So master lifestyle medicine issues and then take courses in functional medicine which should be just called medicine because if you don't know how to that's a broomstick idea of cell processes, of pathways, of interactions between organs, systems and so on.

Like just foundational how do mitochondria work and and the basics of cellular processes and pathways and enzymes. Then you will just be upon of big pharma, just like the symptom, this symptom, this drug, this symptom, you really want to be personalizing and precision medicine practicing.

Then you got to try to really master functional medicine, how the body works, getting down to the cellular level and then building up from there. So the most important things is master the foundations of lifestyle medicine, which of course are avoidance of toxicities, nutrition, everything about nutrition, fitness, sleep, stress management.

Right. Those are things like you and me and the two in the same sister. All right, all right. I actually actually named my practice lifestyle medicine 15 years ago before anybody really talked about it.

But it's funny you say that the whole puzzle aspect, I always say, because I kind of use a similar analogy, and I say the I. V. diagnostic aspect is the actual picture that you're looking at when you're building the puzzle.

So if you don't have the correct picture, which is diagnostics, and I say over, over test, you know, I mean, like the amount of weird things like arsenic toxicities, McTeague, all kinds of weird things that we find can explain somebody's, you know, chronic conditions they've had for ten, 20, 30 years.

So just having that picture to kind of, you know, put your, your puzzle together was one of the most important parts about precision medicine is I'm glad you mentioned just as a lab tests that, I didn't mention is that women with PCOS have higher rates of methylation dysfunction.

So for sure, they testing like MT offered, you know, that enzyme is it can be helpful because many times they really need excessive compared to average person's methylated folate and B12 because they, they don't make the conversion into the methylation pathways very well.

So, you know, you just have to look at all these things right from, you know, the whole piece of the pie. Right. And I love that we both think of we think of medicine and human health from a puzzle that you put together, that you solve.

And it's what makes it fun, challenging. It makes it feel rewarding when you get the puzzle together. All right, the second question, and then I'm going to let you go because I know you've had a busy day, is if you are going to speak to a patient who's coming from traditional medicine and exploring this field right now, what's the most important thing that they should be looking for when looking for a physician or a practice or a place to kind of, you know, get their feet wet with, integrative medicine?

Well, if you can see what the background, education and training is of the practitioner that you're going to, you know, to see if they've done fellowship training at one of the universities, like UCI has a fellowship in integrative medicine, University of Arizona has a fellowship that can lead to an actual board certification criteria like a legitimate board.

They just like the board of Family Medicine, EHR medicine, it's a real board. Or if they've done one of the functional medicine courses, I mean, if all they they have to their credentials.

I do believe somewhat in credentials if all they have is, you know, they took a weekend course somewhere with a, nutraceutical company. I don't think that's quite adequate.

You know?

Advice for Practitioners and Patients

So see if, if they have been doing it for a few years, you know, and, you know, and, you know, check reviews may be, although I hate the idea of Yelp reviews, but, you know, sometimes it can be a little helpful.

And, you know, if you have a friend who has done well, you know, there's nothing like success to breed like attraction, right? Like, I like that person's outcome.

You know, there's nothing more to mouthing than the word of mouth. Exactly. You know, but be careful about just going by social media, you know, because, I mean, anybody can say anything anytime.

And, you know, you have to look at like, I've talked to patients and I say, well, what is the education of the person that you've been seeing? And they actually don't know.

So like you could be a I'm not saying they're bad, they're just different like a lifestyle coach. Or you could be a chiropractor or you could be a natural path, or you could be a medical doctor.

You could be a nurse practitioner. You should at least know, like what was the fundamental, foundational education of the person that is treating you?

And it's amazing how people don't know, like, well, oh, I don't know you followers and likes. And they lose their mind, you know, I mean like they don't understand.

You can see. Oh, I mean like just because a celebrity said something that absolutely nothing you know, I mean, like, you have to deal with a mixture as best you can, you know, and then if it feels wrong, change guy there.

Oh, I love that. That's where we're going to end on that one because that was too perfect. Well, Doctor Gersh, I have to say thank you so much. It's been it's been religion almost when it comes to female, female hormones here.

So I really, really appreciate it. Thank you for being a, you're on the lifestyle medicine podcast. And is there anything you'd like to say in closing?

Well, I am a practicing brick and mortar office person, so I'm actually in my office. I have an exam table right over there. This is there. It is. Exam room.

So, you know, I'm I'm still a practicing, you know, brick and mortar, you know, in the trenches, doctor. So if you're looking for actual doctoring, you know, I'm still one of them.

I'm, I'm not, like, just on social media. I actually see people here. Yeah. Okay. Well, that's why I kept you waiting. I was seeing, which I had no problem doing, darling.

Well, thank you so much again. It's been amazing. I can't wait to, you know, actually watch this again and, you know, get get my pen and paper out and, and and actually take some notes from you.

My pleasure. All right. You have a great day. Okay. Bye bye. Thank you for tuning in to Doctor Talks. We hope today's episode has enlightened and inspired you on your path to optimal health.

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