Introduction to Inflammation

Well, Dr. Kan, it's always such a pleasure to chat with you. You're a man with with. That comes with so much wisdom and knowledge. thank you so much for for chatting with me during this segment of Cancer Breakthroughs.

Thank you so much for having me. Well, so one of the big driver or something that you always want to control, and I always tell patient this is that, you know, cancer does not exist without inflammation.

You know, inflammation is always is kind of the the initial driver. And if you can control that then, really there's nothing that's pushing cancer forward. So.

Tell me tell me a little bit about you know what what is inflammation and how should people look at it. Yeah, I think that's a great question because inflammation is such a catchword these days.

And it's been thrown around quite, quite a bit. And I think everybody sees inflammation as just this big bad wolf. And it's something to be tamed. Right.

And then the word inflammation has the word flame in it. So they think fire, which is, you know, true is one of the cardinal signs of inflammation, the redness, the pain, the swelling, the loss of function.

So people think inflammation is bad. But I'm here to say that inflammation is actually just part of life. It's not really good or bad, like the value judgment is kind of human assigned physiology is just physiology.

But how people choose think of inflammation is the inflammation is actually your immune system's weapon to kill an infection. That's what it is at the base of it.

So what happens is let's say you have some bacteria that's broken through your skin, got into your tissue. Then what happens is you have sentinel fibroblasts and various immune cells that's going to pick up this pathogen and it's going to recruit neighboring macrophages and neutrophils.

And these are immune cells that's going to come to the tissue. And basically they're going to fail. Sometimes this pathogen if it's small enough to be swallowed up that's what phagocytosis means.

And once a slow swallow up this pathogen is going to basically spill a bunch of nasty stuff on it, like, you know, hydrogen peroxide and enzyme and porphyrin.

These are like caustic substances that's going to basically digest the bad guy. And now we digest the bad guy that we kill the bad guy. And but there's probably a whole bunch of other bad guys roaming around.

There's not just one. So then the immune cells are going to take that little fragment, and it's going to present that to the lymph node. That's called antigen presentation to the T and B cells in the lymph node.

So that your immune system can actually make memory cells could produce antibodies. And that allows you for to finish the fight so to speak. Right. Because the antibodies can to help you to recruit the neutrophils better and get the complement protein to come kill the bad guy.

So that process of your immune cells sensing a bad guy, sending these phagocytes to the area to swallow the bad guys up, spilling nasty substances on it, and taking a piece of that fragment to the lymph node that that first step, that's all inflammation.

So inflammation is how your immune system kill the bad guy. Now know that the process of killing the bad guy

though creates some tissue debris. That tissue debris can be the tissue debris of the pathogen that you just killed.

It could also be tissue debris of your own tissue, because when an infection is present, if it's in your tissue, then that bacteria is most likely living off your tissue is right.

It's using competing with resources, and your tissue is causing tissue damage. So you're going to have tissue debris there. And that tissue debris actually creates more inflammation because the process of clearing out the tissue debris is also inflammation.

It's the same process that your neutrophil and macrophage come and swallow up the bad guy. It's the same processes your body use to clean up the tissue debris.

So you can see this can potentially create a vicious cycle of more inflammation. More infection causes more inflammation, causes more tissue. Debris, causes more inflammation.

And this can actually proceed forward to become chronic for some people. Now, your body has built in ways to bring this all back to homeostasis by resolving inflammation.

How Inflammation Drives Cancer

But if you have so much signal right, the signal meaning the instigator that instigated this immune response in the first place, which is too much bugs, too much infection or not enough, nutrient cofactors or not enough white blood cells in the area, or they're somehow suppressed, which we'll talk about a little bit later.

Then your immune system will not be able to stop this process, and then you're going to get this chronic inflammation, which kind of screws up all the other parts of physiology that can lead to cancer.

Yeah. So the key is to understand, you know, like you were talking about the the acute phase of inflammation, which is crucial for us to be able to clear out, you know, like different pathogens or clear out, damaged tissue debris that we don't want it floating around, you know, elsewhere in the body.

I mean, like, we don't want a piece of of joint cells to float around and the thyroid, you know, doesn't belong in the thyroid. So we want the immune system to be able to clear that out.

So all of that is, is that that acute inflammatory process that that is key. But the the the challenge becomes obviously the, the chronic aspect, you know, when when we don't have the control or the immune system doesn't have the ability to, to regulate those inflammatory, and then you're in that chronic state, you know, that's where you have all these ideas, words, you know, arthritis, you know, appendicitis, you know, pancreatitis, you know, all these different things.

Yeah. Right. And I think that the important thing to know that this the immune system is not creating inflammation for no reason. It's an innate there's an innate intelligence where there's a reason why the body's doing something right.

The body doesn't do something because it's, oh, I made a mistake, is ignorant, is doing something because something is triggering to do it. And so oftentimes it's come from environmental stimuli.

Right. Things in environment were exposed to excessively like too much toxin exposure, too much sugar in our diet, too much chemicals in our diet, too much stress in our lives.

And these too much environmental trigger is instigating your immune system to constantly push forward the inflammation signal. And that's what's driving it to become out of balance.

So the question is, so you have I mean, with cancer, you're thinking about the immune system not being able to deal with with the cancer. So then you're thinking more of like a weak immune system.

And here we're talking about inflammation. Then we're thinking of kind of an excessive immune system activity. So how do they both coexist. That's a great question. Yeah.

And because if you think about it inflammation is how your immune system kill things. So if you have a bug to kill that's great to have inflammation. But sometimes inflammation precedes too much and it starts to create immune system imbalance.

And then so a person could actually become inflamed and infected at the same time, like so like, hey, why is that? Because if you're inflamed and if inflammation is how you kill infection, if you're inflamed, then you shouldn't have an infection because you would have killed it all off.

How would you be inflamed and infected at the same time? What what happens is in a body, there's this thing called homeostasis. I'm sure many people know.

And that means your body has some kind of feedback loop. Right? So when something is turned on, this has to wait for it to be turned off. Why? So you turn on the light. When you want to use it.

You turn it off when you don't want to use it. So when you have inflammation, proceed at a certain level. Once they hit a certain threshold, various cytokines will put out in anti-inflammatory signals.

These are anti-inflammatory cytokines or regulatory signals that will tell the immune system that, hey, we had enough of this fire or fight, it's time to like take a break, because if we keep going, we're going to just create problems, right?

So, for example, if you constantly are making T cells and B cells from your bone marrow to fight an infection, if that proceeds, which is great, at a certain point you're going to just beat the pathogen.

But at that T cells and B cell production keep going and doesn't ever stop. That's called a lymphoma right. So then you have a bone marrow tumor because you're just growing all the stuff.

So there has to be a signal for your body to say, hey, we need to stop or it's going to get out of control. So really, when you have way too much inflammation, there's a mechanism for your body to put out these cytokines that actually says, hey, let's call the soldiers back.

The problem is, if you call the soldiers back before the infection's completely cleared, then the infection is going to grow back. So this is how someone can become both inflamed and infected because of this regulatory mechanism where when you have too much inflammation and actually causes your immune system to suppress a T helper one immune cells, and on the T helper one side, these are all the innate immune cells that kill pathogens, but also includes things like natural killer cells, which kills not only virally infected cells, but also tumor cells.

So this is how you can get some immune suppression from chronic inflammation that can lead to cancer. And so you're bringing up the one. So you have this kind of want to balance you know that that you need to have.

So so with the one you're talking about here is kind of the active killing. So tell tell us about the two because that's something that people can, can measure to see to make sure that they're there.

Imbalance. Right talking.

T Helper 1 and T Helper 2 Balance

Absolutely. And Stacey's. Right. Right right. So and now these T cells what they th means T helper cells. And so the T helper cells they're actually many different types.

They start out with a naive T cell which means it's a kind of a T cells that's in diapers. It's like, hey, it doesn't want to it doesn't know what to be when it, when it grows up.

But once it gets a signal like, hey, it's a parasite or it's a mold or it's a bacteria, then this T cell will grow up. It'll put on this battle dress and become different kind of t cells.

It can become a T helper. One can become a T helper, two cells, a T helper. One cells will typically recruit things like your macrophages, neutrophils and dendritic cells to go after bacteria and pass in Candida and so forth.

And your T helper two in these cells will recruit typically eosinophils and mast cells to go after things in the environment that are too big for your immune cells to phagocytosis.

So the mast cells in the, you know, sign of cells will spill enzymes on them to basically break it down instead of swallowing it up. And then there is actually multiple different t t helper cells, those t helper one t helper, two t helper three t or t regulatory cells, 9822.

So there's a lot. And then this is just, there's about seven different T helper cells that we have to discover so far. And mature. More is going to be discovered as time goes on.

And they all serve different function. But we usually talk about t helper one, t helper two because those are two that have opposing function. They kind of work like a teeter totter, which means that if one system's working way too hard, it'll have a suppressive effect on the other system.

So the T helper one, as we talk about, is your innate immune function, which basically recruit the cells to go kill things. The T helper two is your adaptive immunity.

Adaptive means your immune system can actually adapt to what kind of pathogens coming in, and make a specialized memory cell to remember that pathogen.

So the next time the same pathogen come, you can defend it faster, right? So that's that antibody T and B cell response in the lymph node that we were talking about earlier.

So this combination the T helper one T helper two is how your body able to maintain homeostasis at any given point. You may have T helper one that's working little harder.

And in T helper two working little harder. And it comes back as long as you come back to balance. We're all good. But there is a situation where constant stimulation from environmental toxins like endocrine disrupting chemical mold, things like, allergens, things like gut epithelial inflammation, like leaky gut, gut dysbiosis, blood sugar problems.

So all these things tend to drive an increase. T helper two response. It drives up marcel. It drives up your sauna, fills drives up to H2 response which makes you more like sensitive to environment, sensitive to food, more asthmatic, more allergies.

So at the same time. So driving up that response is suppressing your T helper one. So then cancer might be able to avoid detection. Different infections makes it more difficult for your immune system to get Ahold of them.

So this is how this type of pattern can exist. Now this pattern of T helper two dominance and t helper one suppression doesn't happen in every single person, and not every single person with cancer happens 22.

So I don't want people to take this and say, this is the final. This is just one scenario. What that can happen. Yeah. And I think it's it's important for people to understand that there's so many aspects of the immune system and inflammation.

It's such a complex scenario. So you can't just say that I, I need to shut down. I'm too inflamed that I need to shut it down or, you know, I my immune system is not functioning.

So I just need to activate it. Yeah. There's just so much more at play when you deal with inflammation and immune

system. So how would an individual kind of navigate this space, you know, like like they they come here and they say, you know, I'm dealing with cancer or dealing with an infection or whatever it may be.

You know, how should I know where my immune system is? You know, where my levels of inflammation is and, and and what kind of steps can I take to to balance that and make it as effective as possible?

with what I'm dealing with. Yeah. Always good to bring it down to practical. And I think, you know, for the immune system, a lot of this information is, easier to obtain with lab tests.

Right? If you don't have lab tests, it's kind of hard to tell whether you have, you know, high neutrophils or high monocytes or high eosinophils. so lab tests can be helpful.

And some of these are, very straightforward for regular blood tests like a CBC. If you know how to interpret that you can get CBC with differential and see your neutrophils your monocytes.

The monocytes makes up your macrophage and dendritic cells. And then you can see your NFL base of IL lymphocyte and lymphocytes going to be a representation of your all your T and B cells.

So it doesn't break it down into 1 or 2 whatnot. But that gives you a good start. And then other markers for immune system really looking at inflammation markers.

Because remember inflammation is your immune system trying to kill something. But inflammation is not one marker. There are multiple ways your body can create inflammation.

So for example C-reactive protein it's just one manifestation that in inflation it's really interleukin six that we're measuring there. Now you can be inflamed without having high interleukin six right.

So you can have other ways you can be inflamed if you have high homocysteine you're going to be inflamed. It's going to damage your vascular endothelium.

If you have high fibrinogen you inflame your very high ferritin. You're inflamed. You have hemoglobin A1, C you're inflamed. So there's many things we can look at to get a picture of how inflamed you are and whether your immune system is working properly.

Now, if we want to get a little bit more fancier, we can run very detailed cytokine panels and check natural killer cells, CD4 to kDa ratio. There are tests, but it requires, you know, a doctor like Doctor Cavaliere and myself, people who know how to interpret those immune panels and derive meaning from that.

Right. Because it's not that you look at the test is, oh, this is high. So you take this, this is low. So you take that is not a recipe. It's a it's a science.

And the art of understanding what the body's trying to do, which means that you took it. Take a look at the lab test, but you also have to take a look at the person.

Right. We can find a person in the lab. We don't just look at the lab without looking at the person, because we're not fixing the lab. We're fixing the person.

So their history, how they present all of that matters, along with the labs. So that's that's how I would get data about the immune system function. As far as what to do.

I personally like to use a a roadmap, right? I call it a neuro metabolic roadmap, which is what I do, which is probably very similar to what most doctors do.

That's kind of got to go on the got it together, which means that we want to address things in a systematic way.

Testing Immune and Inflammation Markers

That's comprehensive, but that also takes into consideration of some type of sequence or priority. Right? So for me, the one of the biggest priority is make sure that an individual has good fuel delivery.

Right. They can deliver fuel to their working tissues. Because if you can't get fuel to this to the tissue, then they can't make energy. And you need energy for everything to work, right.

You need I mean, talking about these immune cells, your white blood cells, for them to kill something, I mean, they need energy to chemotaxis from here to there to get to the pathogen.

I mean, all takes energy. So if you don't have energy, your immune cells are not going to work that well. You need energy for you to make new tissue to regenerate.

So I think getting energy is is really important. And to me, those two variable comes down to oxygen and glucose. Right. For for most people like if you if you're anemic that's going to be a big problem.

You can deliver oxygen to your tissue. If you have low perfusion because you have small vessel disease, you have circulatory issues. You got a problem.

You can't you can't get blood to your tissue. If you have sleep apnea, that could be a problem too, because you're not breathing. On the other hand, as glucose, right.

If you have hypoglycemia, it's not going to work because you're not getting glucose to your tissue. If you have insulin resistance, same thing. You're not getting glucose to the tissue.

It's all stuck in your blood and your fat, but nothing's getting into your cells. So your energy starved just the same. Whether you have hypoglycemia or insulin resistance.

So to me, in my practice, those are two the the first thing that I look they're not the only thing I look at, but they're there something that I don't skip over.

So, you know, going back a little bit to kind of that that inflammation and also, you know, the, the immune suppression that we're talking about. So it seems to me that when that when a tissue is starving, you know, so we're talking about kind of that tissue debris that's floating around, you know, when a tissue is starving and it's able to regenerate appropriately, you know, which to me, you know, with with cancer, it moves into that kind of survival state, you know, when the tissue doesn't have the resources that it needs in order to be able to thrive, that is kind of where that it ends up in that, that chronic inflammatory state, because you continually have tissue that's not thriving.

And so you get debris that's continually there. So, you know, the the ability then to metabolically support that tissue. And obviously with that like you mentioning you need then transport, you know, to that tissue as well of nutrients of oxygen toxins out and all these kind of things.

So so now we're looking at, you know, that that inflammation in itself, I mean, without the metabolic, without the circulation, you know, you have that excessive, inflammation.

And then also it will then lead them to the immunosuppression as well, which, you know, then the body can't really fight that off. So what are some of the other things in regards to immunosuppression in addition to like you said, the metabolic, this lack of circulation, what are some other things that people can consider that can also impact that, that immunosuppression?

Yeah. I think for me, I see a lot of, environmental toxin issues impacting the immune system. these toxins can literally poison the immune cells. I mean, these toxins can impact, you know, immune cells, mitochondrial function.

I mean, cells have mitochondria. They need to produce ATP. So if you have toxins and poison that's impacting mitochondria, ATP synthesis, then immune cells not going to work.

And I also see sometimes these toxins can actually get stored in the bone marrow. Oftentimes I'll see people with very low white blood cell count without, you know, any other hereditary immunodeficiency syndromes.

And and oftentimes I'll find them common in heavy metal issues or other environmental toxin issue. Which leads me to think that there may be these toxin has gone into the bone and is actually inhibiting white blood cell bone marrow production.

And that can be a manifestation of immune system weakness. Other things that I see, can it can really cause problem. I can say there's this under, underestimate the psychological aspect of it. Right.

So if you're under chronic stress, that's going to be a big inducer depression. Right. And it's almost like the chronic stress can both create an inflammatory response.

You can get stress from the inflammatory response, especially when you have spiking high cortisol because cortisol dampen inflammation. So if you're if you're spiking high cause what happens chronically you get cortisol resistance.

So the cortisol no longer works. So you can dampen inflammation as well. And then there's also this chronic immunosuppressant that I see in people with chronic stress.

It seems like that may be related to and adrenal problem as well. So those are some of the other things that I see can be impacting the immune system.

Yeah. So the I mean like the chemicals and heavy metals, and it is interesting and I and I see that quite frequently as well. You know, the impact that it has, you know, with the bone marrow.

So if anyone that deals with like, you know, multiple myeloma or lymphoma or, you know, leukemia or any any of these type of blood type of cancers, then I always, you know, look and see, what what are the heavy metals?

What are the chemicals? So somebody's exposed a lot of glyphosate. what what what are we looking at there? Because that can really interfere. Then, you know, with the, the energy production of of those cells, you know, I kind of look upon it as, you know, throwing dirt into an engine, into the oil.

Yeah. They, you know, the mitochondria. It's not going to work very well. I like that analogy throwing dirt in the oil. That's that's really a lot of what's happening here. Right.

It's like we're we're kind of gumming up the, the the cellular biomarker or a biochemistry. you know, a lot of times when you have chronic inflammation, you have cytokines.

And these cytokines literally block receptors on, you know, like hormones, receptors, thyroid hormone receptors and so forth. So I really like that analogy of so in dirt in the engine block, because that's pretty accurate to what's happening here.

Yeah. Yeah. Because you got me in the mitochondria is a is a machine you know. And it's got a I, I'm just going to work perfectly fine. So if you have you know these chemicals that are just can I instead of glucose or the energy that we need and yeah then that that's just going to block the whole process, you know, from, from taking place.

so with. Yeah. So the chemicals have metals, I mean, are there other kind of lifestyle aspects as well that people can consider.

Metabolic Foundations: Fuel, Digestion, and Detox

You talked about stress and obviously, you know that that's a big, big deal, a big factor. It's hard to almost live today without stress. I mean, so what can people do, you know, practically to be able to control, you know, you know, have a lifestyle that supports, you know, an effective immune system and then also a smart inflammatory process.

That's a great question. I think this is comes down to, you know, a lot of individual choice, right? When we say lifestyle is a lifestyle choice, right?

And nobody's forcing you to drink alcohol, nobody is forcing you to stay up late. And even with stress, you know, stress is something that we perceive.

Right? So it's a it's a perception and it's an interpretation of the events around you is not the event. It's your interpretation of the event that creates a stress.

So and just so you know, stress physiology is, is real, which means that I'm just a figment of your imagination. You're right. If some circumstance happens, somebody cut you off.

You create this narrative that that's stressful. You want to, you know, given the number one sign. And that stress literally creates the physiology and the biochemistry that actually downstream leads to an inflammatory response.

Right. So so know that stress is not just in your mind is something physical as well. But I think as far as what you just talk about there, Michael, is like, what can people actually do, you know, with the stress aspect of it, recognize that it's a cycle neuro immunological response that starts with the mind but has a body consequence.

But you can control your mind, right? People sometimes think they don't control their mind, but you actually do control your mind. So you have to. I think it behooves people to take an inventory of their life.

Right. I think, for I'm sure you do this a lot for, for cancer patients. Like what drove them to like, what's the cause on a mental aspect of it that caused them to have cancer?

You know, a lot of times it's anger, bitterness and things like that. And I think it's good for us to take an inventory and really create more margin in our live right in this go, go, go environment.

If we don't have some downtime, right? Just like your car needs to rest in your body, you need to rest, right? You need to rest mentally and spiritually and physically.

So create more margin in your life so you're not constantly going go, that's really important. And then from a nutritional perspective, you know, it's really about for me regulating blood sugar.

Right. Because that's a that's a big driver for metabolic. And by the way blood sugar dysfunction is a big driver for cancer as well. So regulating blood sugar basically if you could regulate your blood sugar a lot of the side benefit is going to kind of reach out into benefiting other things.

For example, if you eat a paleo diet or if you eat a mediterranean diet, those are diet that tend to be very glycemic. Favorable right favors stabilizing your blood sugar, but the fact that you're doing a mediterranean diet or a paleo diet means that you also intaking quite a bit of vegetable as well.

Then you're going to get the antioxidants and all the benefit from the fiber which benefit your my club, my gut microbiome. So, you know, stabilizing blood sugar to me is like job number one.

Oftentimes that's where I start. Certainly can include a lot of anti-inflammatory foods. You can use a lot of herbs and spices, which I consider the secret weapon against cancer, because many of these herbs and spices have a lot of polyphenols and antioxidant.

That's very helpful, to help people to build out that resilient immune system. And then regular exercise cannot be

overlooked as well. You know, a lot of times people will want to just take a supplement.

And I think there's no replacement for physical activity. There's no replacement for, you know, just getting your mind and your spirit right by having downtime and meditate and having, you know, a heart to heart with, you know, the, the, the, the, you know, the, the universe and the creator that brought you here.

That, along with the healthy diet, is what, you know in a simple in a simple way. It's going to help most people. Now, some people they have they're complicated.

They have a lot going on. That's when they need the lab test. They need somebody who can, you know, actually kind of sort out this stuff, right? Untangle this ball of fish line and then untangle it one by one.

And sometimes you need that help. But for most people, it's doing the foundational things that's going to make the most difference for them. Yeah. So let me just kind of reiterates understand.

So the foundational I mean you have the, the the mind I mean controlling the mind in regards to stress. And I love how you said, you know, margins create margins because people always try to see how much can I fit in into this space of time.

So it's it's, you know, how much can I jam in. And usually it's overflowing. Yeah. So there, there there are no margins whatsoever. So can I give yourselves and the grace to have those margins and know that those margins are blessed?

the it's not that you're lazy. It's not like you're not productive. It's not like because there's a lot of things that happen in your body and in your psyche during those margins.

Wow. I'm learning something right here. You guys need to buy this. This talk I'm telling you, give the margin is the blessing. My goodness. Just buy this thing right now. Please.

Oh, say thank you. But and yeah, because it's it's kind of like when we're sleeping. I mean, we were talking about how important sleep is, and in our kind of productive world, we're thinking, yes, sleep.

You know, then I'm not doing anything. So I remember Tony Robbins. Yeah. He he he he was thinking that four hours of sleep, that's all. That's all he needed.

You know, he can sleep when he's dead. Yeah. And he's kind of thinking, go, go, go. And then all the research is coming out. You know, everything that happens while you're sleeping.

You know how how active the body is, you know, restorative regenerative detoxification, you know, that's taking place. And and that is the same like we're talking about your margins.

You know, that is where a lot of even though we are in that stillness, you know, that that's where all the activity that really, really takes place. And it's kind of like where they talk about universe, you know, how, what is it say like a, a square inch or.

No. Yeah. Thing goes like a square inch of space. Had more energy in it than all of the matter in the universe, you know. So it's just talking about that nothingness.

How how how powerful that is. Yeah. Activity sometimes is an illusion, right? You think you're being, doing more by being active, but, you know, sometimes you accomplish more by not doing something also.

Yeah, yeah. And yeah, as kind of like all these, these geniuses when they have the eureka moments. Yeah. It it it's not one they're can of go go go. It's usually when they're sleeping they're in the shower.

They're in the. And that's where you know beautiful music is created. Scientists you know that that's where they

have their best discoveries. So the amount of activity that takes place during that time is incredible.

Well, that's similar to healing, right. sometimes it's mostly about taking away the bad stuff, not about taking in a bunch of, you know, if you're taking 100 supplements, you're probably not doing it right.

it's about doing just the right things at the right time and getting rid of the stressors on the system. And, and so so you have that aspect. And then the second aspect you've talked about blood blood sugar.

And that is such a foundational that I don't think people really understand, important. That is the impact that it has on your, your adrenals, your endocrine system, your inflammatory.

I mean, it just bleeds over into everything. Yeah. I mean, I want to make clear it's not the only thing, but and, and there are many other things that are also very important.

But I think if you don't get the blood sugar right from the get go, it'll be very difficult for the other things to work. For example, if you're trying to detox, but yet your blood sugar, you're like, you're hypoglycemic, right?

You're constantly I oh, I feel shaky, lightheaded, I feel weak if I don't eat, you know, and you hangry. It's going to be very difficult for you to have a successful detox because for you to carry out detox pathway, it requires energy.

And one of the phase two detox pathways, glucose, which requires stable glucose. So I think it's all about setting up the foundation so that you can do the things that you want to do later, which is might include detox.

so blood sugar is not the only thing. It's not not necessarily the most important thing. Because the other thing that's just equally important. But I think it's one of the first things that you got to get right before you springboard from there.

Yeah. It's it's I yeah, I agree, it's, it's a foundational aspect. And obviously there are a lot of other things to do, but if your blood sugar goes up and down, you know, continually, then your body is going to be, each time you go down, you know, you know, your the body goes into that survival state and survival mode and that is the last thing we want to do when we're dealing with cancer.

It is the last thing we want to do because we're in that survival state. We're not able to regenerate, detoxify or anything like that. So then the the next phase, you talked about movement, you know, so those those are kind of the, the three foundational.

So when you create a roadmap for an individual, those are the three first steps. So to say that you that you you know that you establish and what what happens after that.

Yeah. After we establish, fuel delivery oxygen, glucose that they're stable. Then I started working on the digestion because if you can't break down your nutrient, then no matter how healthy you eat, how organic you, nothing's getting there anyways.

So we got to optimize digestion.

Lifestyle, Stress, and Practical Support

And digestion is pretty complicated because this is a whole two from bowel to anus, and a digestion actually starts in the brain with the vagus nerve.

So it's not just, oh, let me take some enzymes. So you got to kind of see where the breakdown is after digestion. Then we start work on the immune system and that's that one two maybe, you know, in some cases if they're super inflamed, we may need to dampen inflammation.

So we're not creating more tissue damage. In other cases. You got a raging infection, in which case that we don't

want to dampen the inflammation over.

Hand it right, right. It's all about like the degree, you know. So that doesn't mean you can't do any anti-inflammatory when you have an infection. It just that you don't want to squash the inflammatory process.

If you have a raging infection, because then you're going to make that ineffective. So it's kind of assessing what's needed and dampening inflammation help the body get rid of pathogen load.

And once we do that then there's just a lot less of this inflammatory trigger. The next I will work on detoxification because toxin is another one of those Ambien noises that drive the immune system activation.

So we then detox. So by the time we get detox we already done the the fuel and the digestion and and the immune function. So by the time we get to detox, the body is in a much better space to do that.

And then lastly, then we work on optimizing hormones. Now keep in mind, as I state this, this roadmap, sometimes we go outside of the roadmap. Sometimes we may have to address the hormonal first if it's really acute, right.

If somebody come into me and they haven't seen any doctor in five years, they refuse to go and they find that a hypothyroid TSH ten like, okay, you need to go get some prescription medication to get that under control while we work on these other thing.

So sometimes we do go outside of that roadmap. But if we follow this as a guidance, then there's less likely we're going to miss the important things, like someone with an anemia that would even bother checking and we went straight into detox or straight into killing some infection.

And they're hypoglycemic, right. So this is just kind of make sure that we are checking all the boxes and we're doing it right by the patient. Yeah. So we make make sure the fuel source is there to be able to do whatever activity it is that, that we want to do.

You know, so also and and what what are some of your kind of favorite tools that you use in regards to kind of modulating the, you know, for immunosuppression or if they're dealing with inflammation?

I mean, what what are some of your, your favorite tools. Yeah, for, for inflammation. And really, I mean, one of the most useful tools that I use is glutathione.

As far as nutrients, you know, glutathione to me is is a multi-purpose tool because not only does it support the T regulatory cells, which help with immuno modulation, it also actually supports T helper one at the same time.

So helps your body to be able to fight off infection. It also is a great antioxidant which you need for detox. And also when you're inflamed you create oxidative stress as well.

And then also use in detoxification one of the phase two detox pathways, glutathione and conjugation. So it's just super versatile. And it's an endogenous compound in our body naturally produced.

But you only have a limited supply. And some people have genetic snips where they don't make that as well. So that makes glutathione on a really prime candidate for for most people with chronic and inflammation and autoimmunity and so forth.

I understand that gluten in cancer, you might have to be careful. This is where you know, you're the expert in that. I don't treat, so much cancer cases.

But, you know, some I read somewhere that maybe some issues, lose iron and, you know, al glutamine. You know, you got to be careful how much you use with cancer.

but you could speak on that. other tools that I feel is really useful is, you know, to dampen inflammation overall to

Americans rather as road travel.

Our top two choices, there's a lot of a lot of other anti-inflammatories, but those two are the one with the most research and probably have some most, sizable effect.

And then lastly, to support the T helper one, immune cells, right. Specifically natural killer cells, medicinal mushrooms has been shown to be very healthy, very useful, like reishi, gamma derma mushroom.

I talk to mushrooms, those things. And then also your, your classical immune support, quote unquote, like Andrew Graff is your echinacea. They help the t help the cells to polarize, to put on the uniform, put on the T one uniform.

And then also things like Chinese skullcap is useful to support T helper, one immune response. Berberine is helpful in that regard. Sulforaphane from broccoli seed extract.

So these are herbal compound that can support one immune response. And that's the beauty of all of it. You know when when you understand what's going on with your immune system and how to support it, that you there are so many cool tools that exist in nature, that is just available there, safe.

And a lot of them are modulating, meaning that, you know, when we think of activating the immune system, then we just think that we take this and it's going to activate, but it also has a modulating effect.

So it doesn't activated too much. Yeah. And and it helps to kind of bring the body into that homeostatic state, you know, that you're talking about. And that's that's that's what that's what's amazing with them.

And there's so many different component to all these natural agents. Yeah. So that it, it will help a little bit over here. Help a little bit over here.

It's not like a antibiotic or an anti-inflammatory. You take it just kind of hits right there and then that's it then leaves everything else. Yeah, it's it's kind of complex structure that, brings in intelligence into this system that that's what's so cool with all these agents that that you mentioned.

Yeah, that's a great point that many of these herbs are immuno are modulating agents, which means the body has its own intelligence. So when you're taking these supplements are supplements not killing the bugs.

The supplements are sending a signal maybe like a megaphone. So say hey over here. And then the immune cell, just like, hey, let's let's get to work. But it's going to regulate itself, right?

So the supplements are not killing the virus for you or killing the cancer cells. It's just getting your immune system to work better. And to answer your question, in regards to glutathione, on and on glutathione.

And it's such a powerful tool. there are a lot of concerns just because, you know, cancer cells use, glutathione on as a defense mechanism against oxidative stress, you know, so if you're doing chemo or doing something that's very oxidative, then the, the cancer cells.

So use glutathione as a protective measure. but it's always the question, you know, whether the low glutathione, that you're taking, is that really going to fuel more of the glutathione on protection, all the, of the cancer cells, or is that glutathione going to help the healthy cells and make them stronger?

so it it's kind of a judgment call from, from the provider. So it's it's not a kind of black and white, you know, good or bad. so, but but it is good to have somebody kind of assist the individual to, you know, make those choices while you go through this.

So, yeah, glutathione is such a powerful tool. And this whole process. I get it. So it's not a contraindication, but it's something to be cautious of.

yeah. Exactly. Yeah. And and especially like after radiation, you know, glutathione can be fantastic. and restoring, you know, tissue function after radiation.

So then it becomes a really powerful tool. So. Yeah. And any anything else that you feel that we should discuss, you know, talking about, you know, inflammation, immunosuppression that that you feel we haven't covered.

I think that's a pretty good overview. I think the final thing I want to leave with is that, you know, you have more, control over your health than you think a lot of time, even specifically with cancer, you may feel, you know, very, you know, out of control, right?

Or something that you know, spring up on you. And it can be very scary for some people, but you have a lot more control than you than you think you do.

And if you work with a knowledgeable provider, you continue to advocate for yourself and learn more. You'll be able to, you know, get to a place where you have clarity on what you're doing.

And sometimes that clarity is what you're looking for. The clarity gives you the confidence to move forward and take the next step. And oftentimes that's all that you could do is just focus on the present moment.

The next step. I love that. Yeah, I think that's yeah, words of wisdom that that's perfect to end this conversation that that was really, really awesome.

Well Dr. Kan, always a pleasure. You're you're bring so much, light and joy and wisdom to the world. So thank you so much for everything. Thank you so much for having me. Thank you.